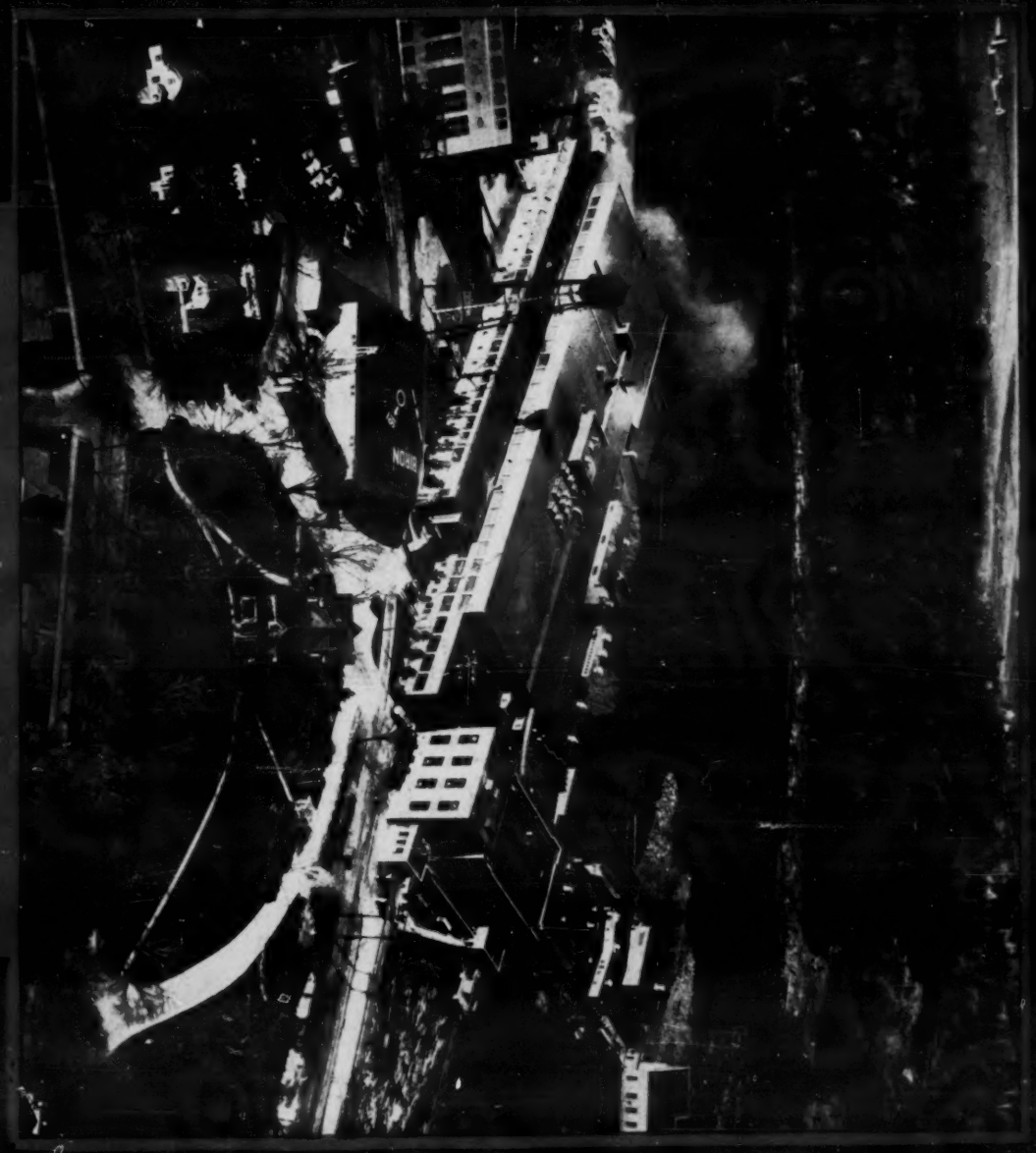
THE PRODUCTION AND MANAGEMENT JOURNAL OF THE NORTH AMERICAN PULP AND PAPER INDUSTRY



PULP & PAPER

REMODELED AND EXPANDED BROWN, WISCONSIN, MILL OF CONSOLIDATED WATER POWER & PAPER CO.—Story Inside

DECEMBER 1951
Vol. 25
No. 13

IN SAO PAULO, BRAZIL

This Bagley and Sewall Paper Machine, making bond, writing, and specialties, is running in the Industries de Papal Samao Mill in Sao Paulo, Brazil. It's a thoroughly modern machine.

Incorporated in its design are many innovations including the Bagley and Sewall simplex quick-changing fourdrinier that makes possible the changing of the wire without the bother of removing the rolls.

The wire is 145 inches wide. Another Bagley and Sewall Paper Machine designed for the efficient manufacture of paper.

When considering the installation of a paper machine, tell us. Our sales engineers will gladly consult with you regarding your requirements.

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DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY

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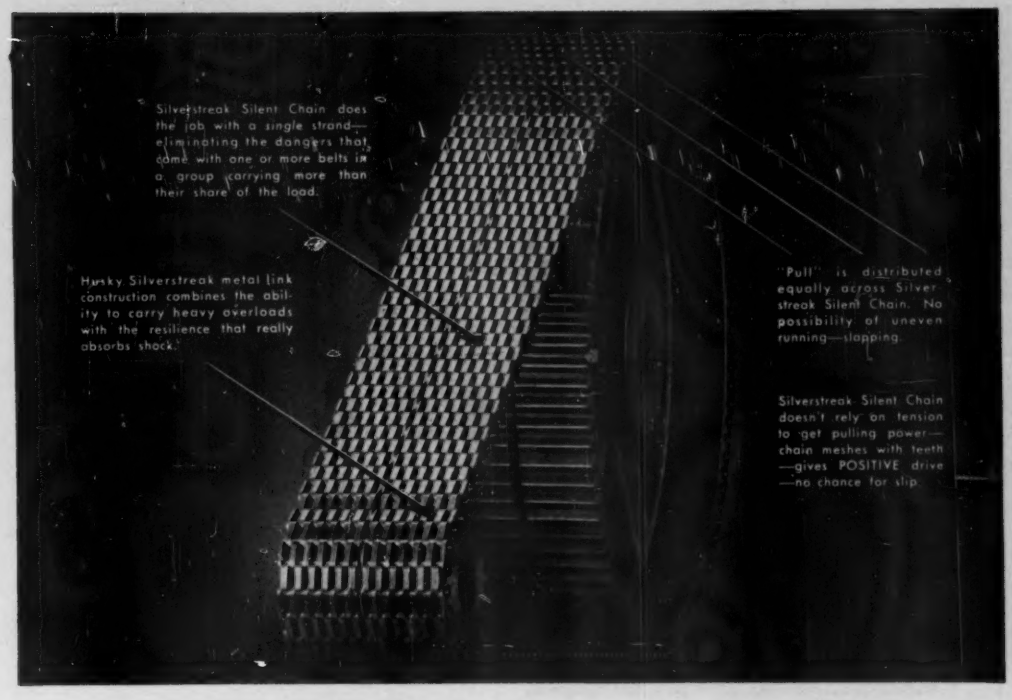
Silverstreak Silent Chain does the job with a single strand—eliminating the dangers that come with one or more belts in a group carrying more than their share of the load.
Husky Silverstreak metal link construction combines the ability to carry heavy overloads with the resilience that really absorbs shock.
"Pull" is distributed equally across Silverstreak Silent Chain. No possibility of uneven running—slapping.
Silverstreak Silent Chain doesn't rely on tension to get pulling power—chain meshes with teeth—gives POSITIVE drive—no chance for slip.

LINK-BELT Silverstreak Silent Chain Drives

Slip-proof
Slap-proof
Shock-proof

TAKE the proven road to increased production — through the best in high-speed power transmission. You'll find Link-Belt Silverstreak Silent Chain Drives are 98.2% efficient. With normal maintenance, you have a *positive* drive that runs for years and years.

And note this important point — on extremely short centers Silverstreaks lose none of their efficiency. What's more, reduction ratios as high as 10-to-1 are frequently used. Both of these Silverstreak features save you valuable space.

One test will prove to you why thousands of production-minded engineers have standardized on Link-Belt Silverstreak Silent Chain Drives.

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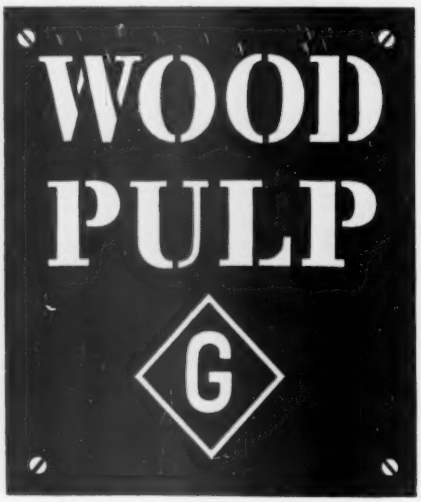
SILVERSTREAK SILENT CHAIN DRIVES

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities.

Established 1886



"Difficulties are things that show what men are."
EPICTETUS

Pulp and Paper today is a world force. Without it, all industry and life—as we have come to know them—would undergo almost inconceivable changes.

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PULP & PAPER
"The Cellulose Age"
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Four Experts Review Conference For PULP & PAPER Readers

FLYNN	SWALLOW	OSBORNE	CAMPBELL
Pac. Coast "Corrosion"	Southeast "Paper Machine"	Southwest "Electrical"	South "Maintenance"

A blue ribbon event of the year in this industry is TAPPI's Engineering Conference.

Recognizing its importance as a "mecca" for creators and builders of nearly everything that is new or significant in the physical establishments in this industry, not just one, but two, PULP & PAPER editors attended the most recent conference out midst the terrapin marshes toward the sea from Savannah (it also had two editors at the joint Southern and Southeastern Superintendents convention a week earlier in Jacksonville).

The Savannah call was answered by over 600 engineers of one sort or another. Certainly, here was *"the cream of the crop"* of this industry. Whether the formal program of technical papers measured up to the high standard of personnel present was not for us, as reporters, to judge.

Instead, PULP & PAPER invited four young engineering executives of the industry to select from the program the papers which they wished, to view and review them for PULP & PAPER readers.

Pictures of these four young men are shown above. Under their names are the subjects and papers they discuss. Their articles appear in the forward pages of this issue. Each one holds a position of responsibility in a leading pulp and paper company —but of course, what he writes does not necessarily speak for his company. Each one is recognized as an expert in the field he discusses—with good sound background and good sound judgment.

We believe they are representative of the industry—Johnny Osborne was born in Florida, educated in Georgia, works in Arkansas; Fran Flynn was born and educated in Minnesota, works in Washington; George Swallow was born in Indiana, educated in New York and works in the Southeast; Charles Campbell was born and educated in Wisconsin, works in Alabama. The companies they are associated with are among the most progressive in American industry.

For what they have to say of the Savannah meeting, turn to their stories—pages 50-68.

Engineering Inquiries

Our editors have been receiving a large number of inquiries from this continent as well as from abroad, seeking engineering assistance from pulp and paper projects.

We would be pleased if all such correspondents would turn to the last few pages of this issue, or any issue of PULP & PAPER, where are published the "professional cards" of the outstanding engineers serving this field.

Concerning U.S. Ownership

Significant to this industry is the decision of the Tax Foundation of New York to conduct an "intelligent survey" of the United States government ownership of 455,000,000 acres, including vast decaying, over-ripe timberlands, equal to ten New England and North Atlantic states—New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, New Jersey, Delaware and Maryland. Every living American would have three acres if it were divided amongst them.

The Foundation believes the survey would reveal vast areas that should never have been in governmnt ownership. The U.S. Forest Service and National Park Service are among more than 40 federal agencies which have their fingers in the pie of administering this vast government-owned domain. Of course, there is inevitably much overlapping of activities and therefore much waste, not even taking into account the waste from poor management.

IN THIS ISSUE

THE ENGINEERING CONFERENCE in Savannah—Pages 37-38 and 48 to 66. Reviews of papers written by our own "board of experts" whose photographs are on this page: By Mr. Flynn on page 50; Mr. Osborne on page 54; Mr. Campbell on page 60; Mr. Swallow on page 64. Other features:

Biron, Wis., Mill 44
Expansion News 46
Scott-Soundview Merger 40
Proctor & Gamble Mill 58
Bloedel-M'Millan Merger .. 72
Gulf States Mill 76
OXIDATION OF BLACK LIQUOR by DeHaas 70
CHEMICAL FORMULATION by Les LaLiberte.. 74
JACKSONVILLE SUPTS... 79
MUNCHAUSEN Story 88
Hollis Article Replies 92
SULFITE EVAPORATION By Harold Jacoby 100
PULPWOOD 86
PERSONALS: South ...104-5
Midwest .. 94 East 88
Canada ... 98 Farwest .107-8
Equipment & Supply Cos. .. 94

PULP & PAPER circulates all over the world. *It is read in virtually every pulp and paper company office and mill throughout the United States, Canada, Mexico, Alaska, Hawaii, the Philippines, Australia and New Zealand. It is read in many other offices and mills in Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Uruguay, Venezuela, England, Ireland, Scotland, Sweden, Norway, Finland, France, Germany, Austria, Belgium, Holland, Czechoslovakia, Italy, Spain, Switzerland, Soviet Russia, Poland, Yugoslavia, India, Pakistan, Israel, South Africa, China, Japan, Formosa, both near and far around the world, where pulp and paper are made.*

ABC

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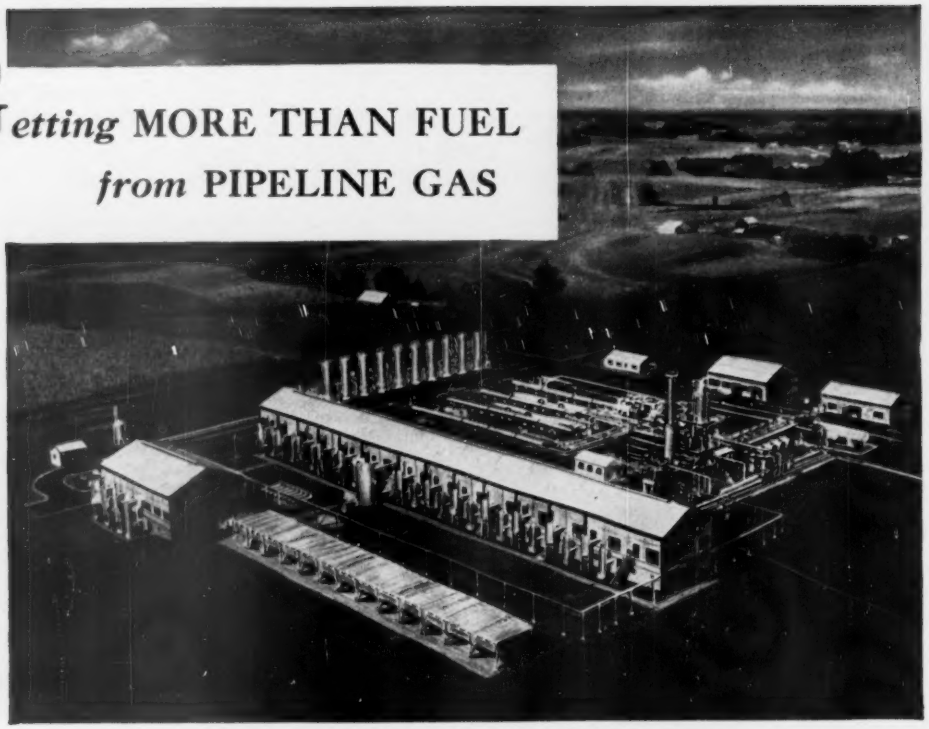
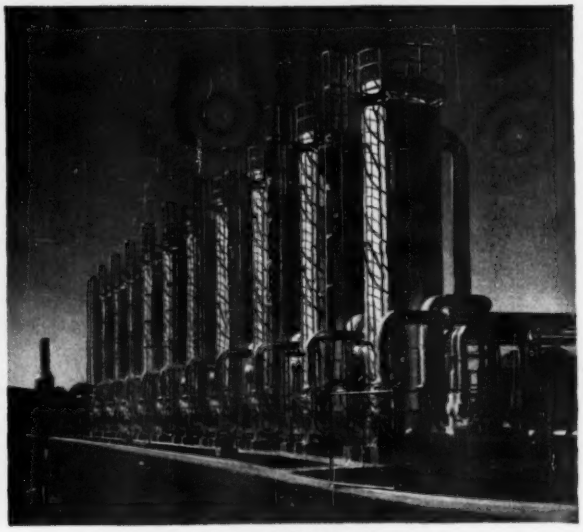
Getting MORE THAN FUEL *from* PIPELINE GAS



Hydrocarbon Extraction Plant, Tennessee Gas Transmission Company

This plant of the Tennessee Gas Transmission Company at Gabe, Kentucky, is the first of its kind to be constructed adjacent to a major natural gas transmission line, for the further extraction of bottled gas and aviation and motor gasoline components from "dry" pipe line gas.

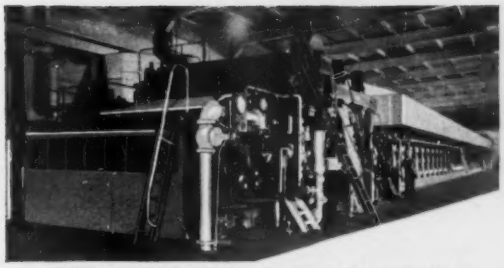
Stone & Webster Engineering Corporation made a report and appraisal of the economics, feasibility and best location for the project and was employed for the design and construction of the plant.



Battery of Dehydrators

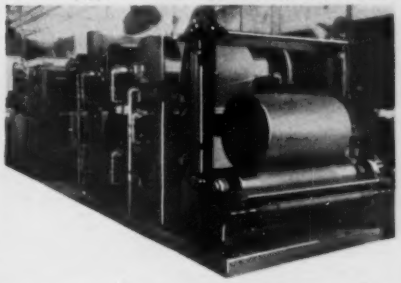
STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.



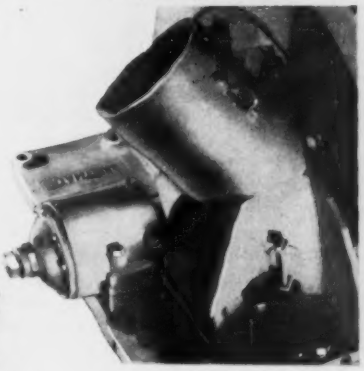
SKF-equipped Pusey & Jones Corporation Cylinder Machine.

SKF-equipped Frank W. Egan & Company Laminator.



SKF-equipped E. D. Jones & Sons Company "Pulp-Master."

SKF-equipped Carthage Machine Company Multiple Knife Chipper.



why do so many prefer SKF ?

It's pretty hard *not* to buy good bearings today, but SKF is the preferred bearing with many paper-making machinery manufacturers.

There are good reasons why!

These manufacturers know SKF as a reliable, friendly supplier. They've learned to have implicit confidence in the experienced bearing engineering specialists at SKF's headquarters. They appreciate the teamwork of SKF field men who are qualified specialists in the application of bearings to paper-making machinery.

Their customers know the value of the complete maintenance service available to them through SKF's Distributor Organization.

Whatever your product, your engineers and designers can have this helpful SKF teamwork simply by asking for it. 7286

SKF
BALL AND ROLLER BEARINGS

8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

integrity • craftsmanship • metallurgy
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product uniformity • engineering service
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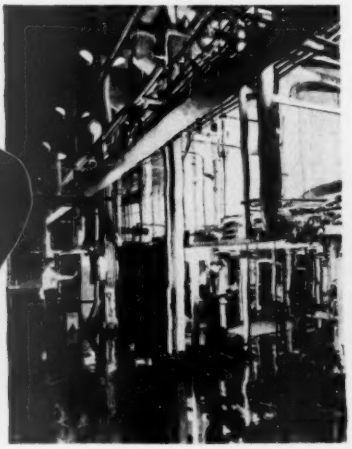
See General American for

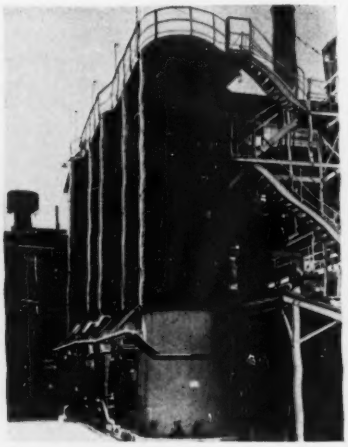
CREATIVE EVAPORATOR ENGINEERING

Indoors or outdoors —Use High Efficiency Conkey Integral* Evaporators

* Patented

Designed to do your job best!





With minor design changes the Conkey Integral Evaporator is adaptable to any plant location requirement without sacrifice of its improved design and operational features. The Conkey may be set outdoors and provided with skirts making it completely self supporting. It may also be set indoors with the skirts omitted and structural steel supports added, which are provided either by the building framing or independent columns.

These advantages are found in all Conkey Integral Evaporators regardless of final job details: (1) Easier to erect. (2) Needs less space. (3) Lower overall pressure drops. (4) Larger, more efficient entrainment separators. (5) Fewer mechanical joints to guard against air leakage.

Because its design reduces pressure drop losses between effects, the Conkey Integral Evaporator provides an increased working temperature drop across the heating element surface. Result: a net positive gain in evaporation—extra evaporating capacity. For complete technical information, write for Evaporator Bulletin.

Other General American Equipment:
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Dewaterers, Dryers,
Towers, Tanks, Bins,
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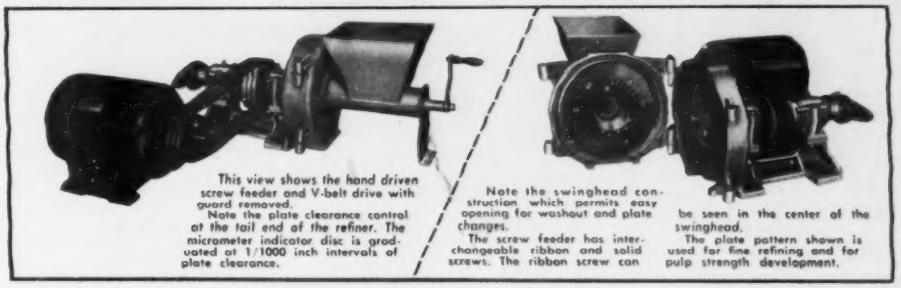
You can improve on your present pulping and fiber studies . . . and explore new possibilities . . . with the Sprout-Waldron "Lab" Refiner.

Designed for semi-plant-scale defiberizing, pulverizing, decorticating, blending, granulating *and other specialized uses—on dry or fluid feed,* hot or cold, high consistency or low—the Sprout-Waldron "Lab" Refiner combines simplicity of design and efficiency, with low initial and operating cost. Plate styles for a wide range of applications are available.

SPROUT-WALDRON 12" LABORATORY REFINER



This view shows the hand driven screw feeder and V-belt drive with guard removed.
Note the plate clearance control at the tail end of the refiner. The micrometer indicator disc is graduated at 1/1000 inch intervals of plate clearance.

Note the swinghead construction which permits easy opening for washout and plate changes.
The screw feeder has interchangeable ribbon and solid screws. The ribbon screw can be seen in the center of the swinghead.
The plate pattern shown is used for fine refining and for pulp strength development.

Available with stainless steel construction

In daily use in many laboratories, both private and governmental, domestic and foreign.

Today . . . send for Bulletin 17 which describes this useful basic tool for laboratory and pilot-plant use. Complete specifications are included. Write to Sprout, Waldron & Co., Inc., 32 Waldron St., Muncy, Pa.

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Many New Products Due Thru Use of Fluorine Chemicals
GENERAL CHEMICAL FLUORINE COMPOUNDS

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Potassium Bifluoride
Potassium Polyacid Fluoride "50"
Sodium Bifluoride

ALKALI FLUOBORATES
Ammonium Fluoborate
Potassium Fluoborate
Sodium Fluoborate

ALKALI FLUORIDES
Ammonium Fluoride
Potassium Fluoride
Sodium Fluoride

DOUBLE FLUORIDES
Potassium Aluminum Fluoride
Potassium Chromium Fluoride
Potassium Ferric Fluoride
Potassium Titanium Fluoride
Potassium Zirconium Fluoride

METAL FLUORIDES
Aluminum Fluoride, Crystal
Antimony Trifluoride
Antimony Pentafluoride
Barium Fluoride
Cadmium Fluoride
Calcium Fluoride
Chromium Fluoride
Cobalt Trifluoride
Copper Fluoride
Ferric Fluoride
Lead Fluoride
Magnesium Fluoride
Molybdenum Hexafluoride
Nickel Fluoride
Strontium Fluoride
Titanium Tetrafluoride
Tungsten Hexafluoride
Zinc Fluoride
Zirconium Tetrafluoride

METAL FLUOBORATE SOLUTIONS
Cadmium Fluoborate
Chromium Fluoborate
Cobalt Fluoborate
Copper Fluoborate
Ferrous Fluoborate
Indium Fluoborate
Lead Fluoborate
Nickel Fluoborate
Silver Fluoborate
Stannous (Tin) Fluoborate

NON-METAL FLUORIDES
Boron Fluoride Gas
Boron Fluoride—Diethyl Ether Complex
Boron Fluoride—Phenol Complex
Boron Fluoride—Other Complexes
Sulfur Hexafluoride

HALOGEN FLUORIDES
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Genetron 170—$CCl_2 = CF_2$
Genetron 265—$CClF = CF_2$

The products listed include those which are commercially available as well as a few presently produced only in experimental quantities. For further information on any of these, or on other fluorine compounds you may require, consult the General Chemical Product Development Department.

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PRECISION BUILT FIELD PROVEN PUMPS

"Double Volute"

HIGH PRESSURE

Barker Pumps

Bingham High Pressure Multi-Stage Barker Pumps are of "Double Volute" design, insuring perfect radial balance — unusually short span between bearings — case bolts uniformly located close to shaft centerline — integral crossovers producing casings of maximum strength for high pressure service.

There are more Bingham High Pressure Barker Pumps now in operation and on order than the total number of pumps of all other makes used for this purpose.

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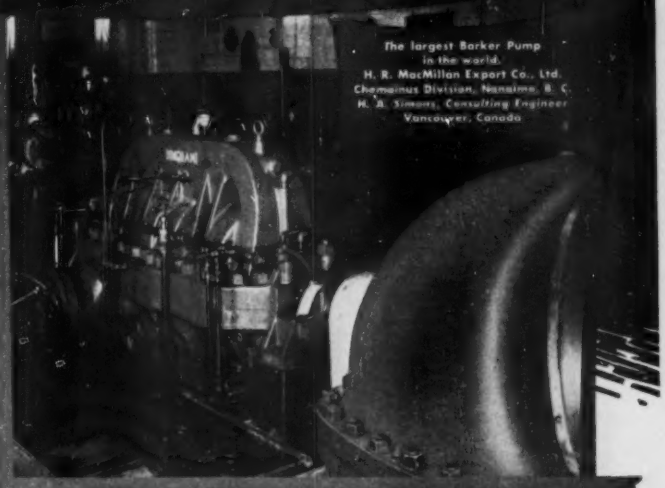
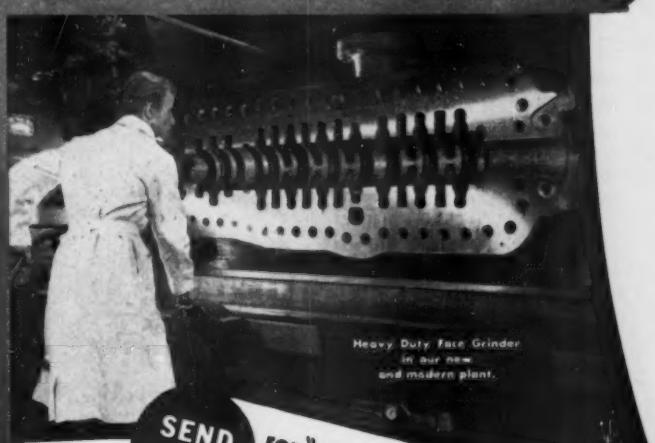


The largest Barker Pump in the world. H. R. MacMillan Export Co., Ltd. Chemainus Division, Nanaimo, B. C. H. A. Simons, Consulting Engineer Vancouver, Canada

It takes Big Precision Tools like these to Build Pumps like this

Bingham High Pressure Multi-Stage Barker Pumps, like all Bingham products, are precision built. All parts requiring close tolerances are ground on heavy duty precision grinders. Pump case flanges of Barker Pumps are finished ground to a perfect degree of flatness by heavy duty face grinders, which are typical of the precision machinery in our new and modern plant.



Heavy Duty Face Grinder in our new and modern plant.

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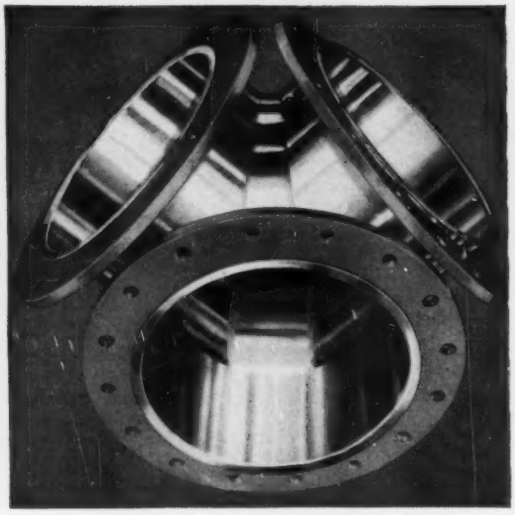
How do *you* figure the cost of a stock line installation?



A fabricated Monel tee, used as a connection between a cycling chest, dump chest, and pump from the hydrapulper of the Maxwell Paper Company, Franklin, Ohio.

The tee measures 16 in. O.D. and is made of 14-gauge Monel. Fabricated by BROWN-SINGER CO., Middletown, Ohio.

You know, of course, that adding fabrication costs to installation costs will give you only part of the picture. During the useful life of a stock line, *maintenance costs* may well exceed the sum of the other two figures.

That is why most mills put *low maintenance* high on the list of stock line specifications . . . and why many of the nation's largest mills choose stock lines made of Monel®.

Monel stock lines and fittings bring you a combination of important advantages that you can get from no other stock line material. Check these assets . . . and compare. You'll see at once why Monel has for many years been a *preferred* metal in the paper industry.

Monel, and *only* Monel, offers you all these money-saving and engineering advantages:

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2. *A smooth, wettable surface to resist slime and fibre accumulation.*
3. *Strength and hardness equal to those of structural steel. Use lighter gauge metal to do the same job—at less cost!*
4. *Good workability. Monel may be readily machined, formed, bent, soldered, brazed, welded. Welds in Monel are as strong and corrosion-resisting as Monel itself.*
5. *Made in a variety of standard mill forms, including wire, wire cloth, and fastenings.*

In addition to its usefulness in stock lines, Monel has an excellent record in many other important paper-making applications . . . stock inlets, slice blades, head boxes, jordan fillings, doctor blades, screen-plates, winding wire, pump shafts, valves, piping.

At present, Monel is meeting large defense needs. But you can still plan now for the future. Find out how other mill operators have solved equipment problems with Monel and other Inco Nickel Alloys. Send today for "Practical Solutions for Metal Problems in Pulp and Paper Mills."

MONEL

. . . FOR MINIMUM MAINTENANCE

EMBLEM OF SERVICE INCO

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street, New York 5, N. Y.

One of two 90' dia. Dorrco Hydro-Treators which treat 25 MGD of process water for a large pulp mill.

Pulp mill water supply problems solved!

with DORRCO HYDRO TREATORS*

As every pulp man knows, a constant supply of clear process water is a key ingredient in the production cycle. Here's the kind of results that four Pulp Mills ** are currently getting from Dorrco Hydro-Treators. We believe they speak for themselves.

	PLANT A	PLANT B	PLANT C	PLANT D
OPERATION	COLOR REMOVAL	COAGULATION	COLOR REMOVAL	TURBIDITY REMOVAL
NO. AND SIZE OF UNITS	2–80' DIA.	1–75' DIA.	2–100 DIA.	2–90' DIA.
CAP. PER UNIT-MGD	10.0	6.5	10.0	12.6
AVG. EFF. PPM	3–5 (TURB)	3 (TURB)	10 (COLOR)	TRACE
SLUDGE % SOLIDS	– – –	21.6	– – –	– – –

If you are investigating high-rate, up-flow type units for your process water supply, get *all* the facts before deciding. A new 32 page bulletin in color, #9041, describes the Hydro-Treator in detail. For your free copy write to The Dorr Company, Stamford, Conn., or in Canada to The Dorr Company, 80 Richmond Street West, Toronto 1.

* Trade Mark, Reg. U. S. Pat. Off. ** Names on request.

DORRCO

DORR

WORLD-WIDE RESEARCH · ENGINEERING · EQUIPMENT

THE DORR COMPANY · ENGINEERS · STAMFORD, CONN.

Offices, Associated Companies or Representatives in the principal cities of the world

Crane No. 1425 Iron Body Pulp Stock Valve

it costs more to maintain piping today!

You'll spend less for maintenance by using Dependable Quality

CRANE VALVES

. . . That's why more Crane Valves are used than any other make

Pulp stock can't clog these valves

That's because Crane patented body design prevents large accumulations of stock under the knife-edge disc. As the fully-guided disc closes, step-like notches in the body "comb" the trapped fibers into small bunches that are easily sheared by the disc.

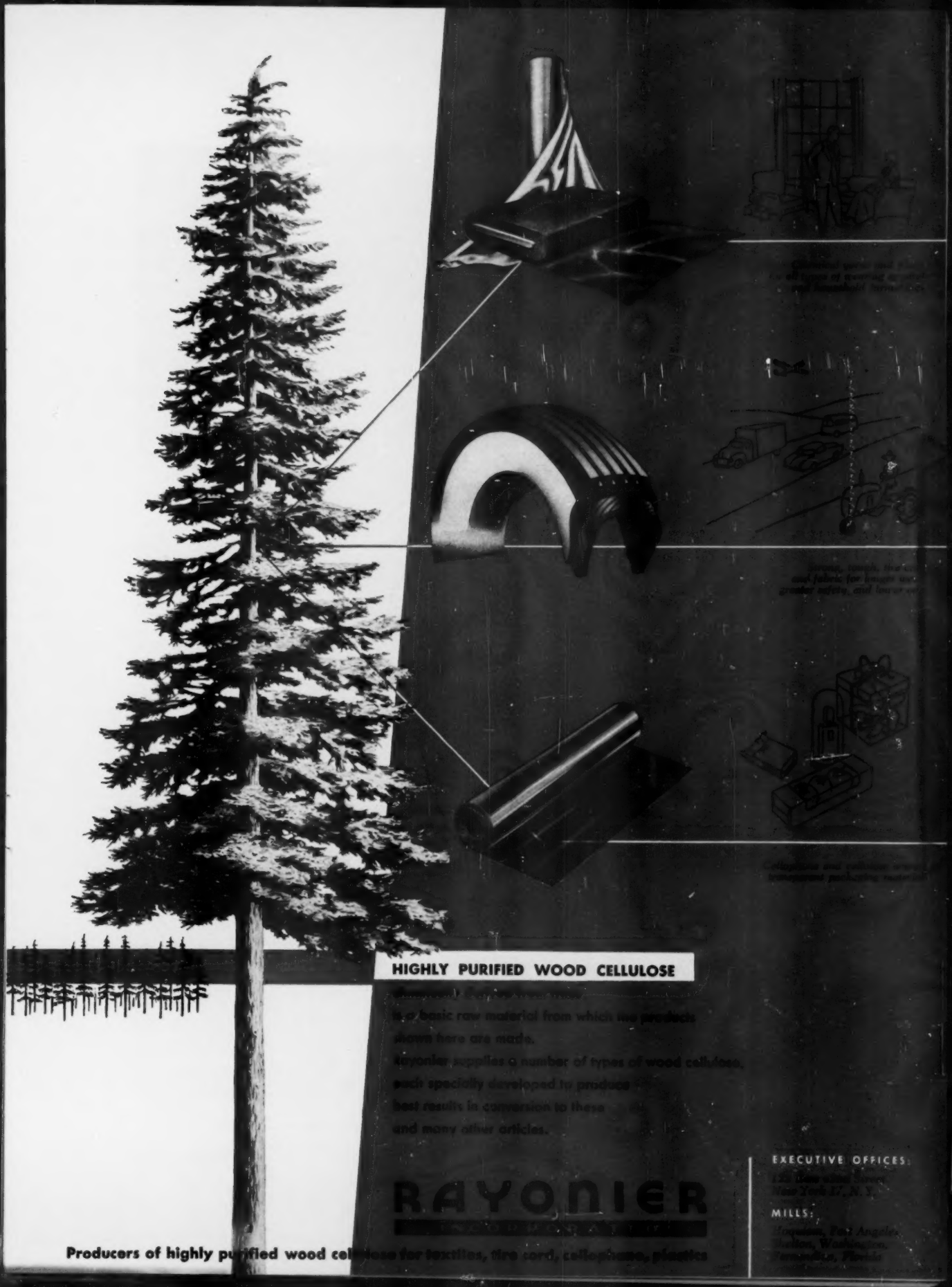
Crane **"no-bonnet"** design eliminates areas where fibers can accumulate. Six tapped and plugged body openings and an easily removed disc-stop holder facilitate flushing and cleanout. Available in wheel-operated and quick-opening patterns; all-iron or brass trimmed.

Whether you need pulp stock valves or any other type, you get better performance features like these—and at lower final cost—when you insist on Crane Quality.

CRANE CO.

General Offices:
836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING



HIGHLY PURIFIED WOOD CELLULOSE

is a basic raw material from which the products shown here are made.

Rayonier supplies a number of types of wood cellulose, each specially developed to produce the best results in conversion to these and many other articles.

RAYONIER

Producers of highly purified wood cellulose for textiles, tire cord, cellophane, plastics

EXECUTIVE OFFICES:
[illegible]
New York 17, N. Y.

MILLS:
[illegible]
Hoquiam, Port Angeles, Shelton, Washington
Fernandina, Florida

Photos courtesy Whippany Paperboard Company, Whippany, N. J.
For fast, on-machine scouring, as low as 2-3 lbs. Syntergent K to 50 gals. water may be used to make up either an acid or an alkaline wash. Felt is run at full width.

FELTS THAT LAST SAVE MONEY, INCREASE OUTPUT

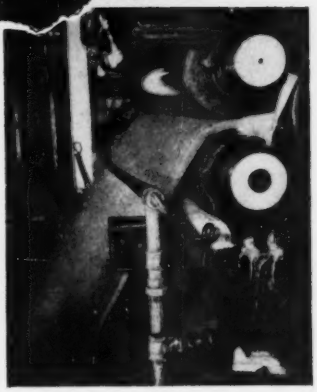
You'll find Nopco Syntergent® K felt washing compound an exceptionally effective felt preserver. We have called upon our wide experience as a leading supplier of textile chemicals, and our close association with the actual problems of producing good felts for the paper maker, to formulate a compound that does an outstanding felt cleaning job . . . that helps to reduce equipment costs and increase production. (Remember: Clean, well cared for felts can actually increase output by as much as 5 per cent.)

Syntergent K mixes readily with warm or cold water in all concentrations, to provide solutions which give copious and persistent lather and have excellent detergent and wetting characteristics. It is stable to both mild alkalis and acids, and thus can be used with either an alkaline or acid wash. It is likewise compatible with soap solutions.

You'll find Syntergent K very effective, also, for wetting out and conditioning brand new felts.

We shall be glad to supply you with formulas for *on*-machine and *off*-machine washing of press felts, wet felts and new felts. Our Technical Service Division stands ready to assist you *in your mill*, to make sure you obtain the best results as economically as possible.

Used in conjunction with soda ash, Syntergent K is ideal for cleaning vats, piping systems and screens during grade changes.



After running felt 10 - 15 minutes, fresh water showers carry away embedded soil in less than 5 minutes. The Syntergent K washes out freely and completely.

NOPCO
EVOLVED THRU RESEARCH

NOPCO CHEMICAL COMPANY

HARRISON, NEW JERSEY

Branches: Boston, Chicago, Cedartown, Ga., Richmond, Calif.

Elliott FABRI-STEEL MOTORS AND GENERATORS

Another big low-speed motor by..... ELLIOTT

A large low-speed engine type synchronous motor with split rotor, for driving Ingersoll-Rand type PRE reciprocating gas compressor.

Close-up of the pressurized explosion-resisting collector ring enclosure.

This big motor is rated 2000 hp, 164-rpm, 4000 volts, 3 phase, 60 cycle, 50 C rise, 1.0 power factor. The split rotor facilitates assembly on the compressor shaft in the field. Collector rings are enclosed, adapting the unit to duty in explosive gas atmosphere.

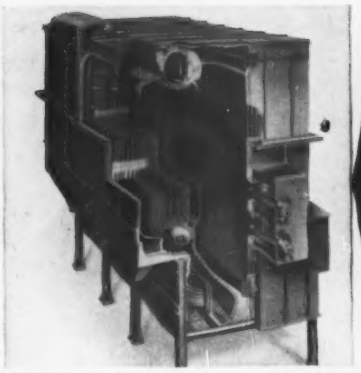
Elliott has established a particularly strong reputation in large motors designed for specific and individual conditions, such as the one illustrated here. An exceptional degree of rigid ruggedness is gained by the famous Elliott "Fabri-Steel" construction while high performance and endurance are assured by quality workmanship throughout.

For full details write for Synchronous Motor Bulletin PB5000-2.

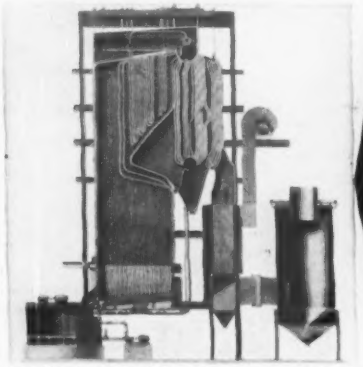
L-809

ELLIOTT COMPANY
Ridway Division • Ridgway, Pa.
Plants at: JEANNETTE, PA. • RIDGWAY, PA.
AMPERE, N. J. • SPRINGFIELD, O. • NEWARK, N. J.
DISTRICT OFFICES IN PRINCIPAL CITIES

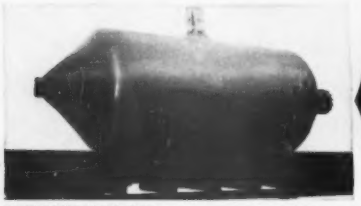
HALF CENTURY OF 1901 E 1951 POWER PROGRESS



BOILERS—B&W boilers have a long and outstanding record for low-cost steam generation in pulp and paper mills. They span a range of types and sizes to satisfy every requirement of capacity, space, temperature, pressure, fuel, and method of firing. Each type combines the dependability of job-proved design with every economy of standardization commensurate with flexibility.

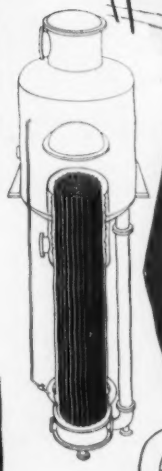


RECOVERY UNITS—Efficient chemical recovery and reduction, along with maximum steam generation per ton of pulp, are combined with economical operation and maintenance in B&W Recovery Units. Installations for burning waste liquors of the kraft, soda, and bisulphate (magnesium, calcium, and ammonium) processes have a total recovery capacity of over 16,000 tons. B&W recovery units were the first provided with automatic soot blowers to eliminate routine hand lancing.



PRESSURE VESSELS—Dependable welded processing units, in sizes and shapes for any paper mill requirements, are fabricated by B&W from carbon, alloy, or clad steels. All vessels are x-ray inspected and stress relieved.

time-proved aids to LOW COST production



TUBES—Seamless and Welded steel tubes are made by B&W in a range of carbon, alloy, and stainless steel analyses to satisfy every requirement for condensers, evaporators, heat exchangers, recovery units, boilers, and other paper mill applications. Modern improvements in pulp and paper processes impose a greater variety of tubing requirements than ever before. B&W Tube Representatives offer a wealth of experience on tubing problems to help users determine the analyses best suited for specific operating conditions.

BABCOCK & WILCOX

THE BABCOCK & WILCOX COMPANY

85 Liberty St., NEW YORK 6, N. Y.

P-766

ASTEN

dryer felts

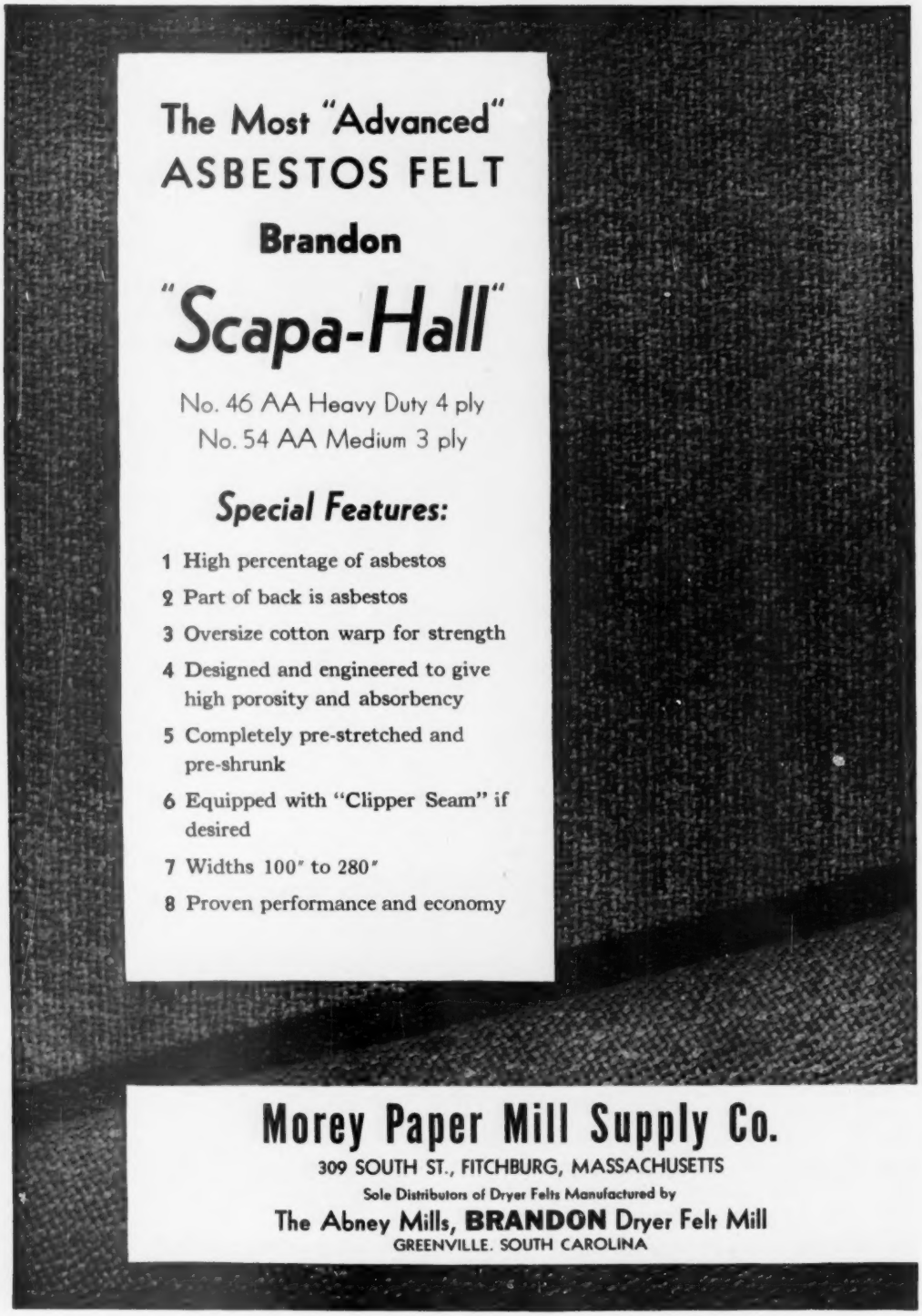
for dependable performance

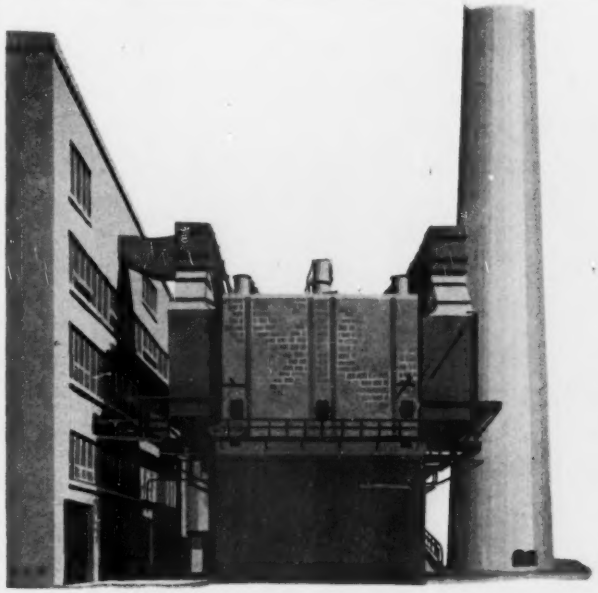
Unique conditioning, plus careful weaving and inspection,
makes ASTENS the choice of experienced
machine tenders everywhere.

Economy in the long run

ASTEN-HILL MFG. CO.
PHILADELPHIA, PENNA.

ASTEN-HILL, LTD.
VALLEYFIELD, QUEBEC


The Most "Advanced"
ASBESTOS FELT
Brandon
"Scapa-Hall"
No. 46 AA Heavy Duty 4 ply
No. 54 AA Medium 3 ply
Special Features:
1 High percentage of asbestos
2 Part of back is asbestos
3 Oversize cotton warp for strength
4 Designed and engineered to give high porosity and absorbency
5 Completely pre-stretched and pre-shrunk
6 Equipped with "Clipper Seam" if desired
7 Widths 100" to 280"
8 Proven performance and economy
Morey Paper Mill Supply Co.
309 SOUTH ST., FITCHBURG, MASSACHUSETTS
Sole Distributors of Dryer Felts Manufactured by
The Abney Mills, BRANDON Dryer Felt Mill
GREENVILLE. SOUTH CAROLINA



Let's be practical about precipitators

When a conventional precipitator is shut down for maintenance and inspection, valuable materials caught in the gas are discharged to the atmosphere by a by-pass system. This means a drop in recovery rates and an increase in operating costs. But Koppers solves this problem with a new design . . .

Koppers-Elex electrostatic precipitators assure maximum recovery with an efficient double-chamber design!

KOPPERS-ELEX electrostatic precipitators save you money two ways on recovery boiler applications. The first way is with maximum recovery. Successive collection zones can be separately energized which means higher voltages can be applied—with an increase in efficiency as a result.

The second method is with Koppers double-chamber design. Instead of conventional by-pass systems, the dirty gas can be diverted through a single chamber while the other is shut down for inspection and maintenance. This means recovery continues with only a slight decrease in efficiency. As a result operating costs go down and recovery rates stay up.

In addition, operation is simplified by Koppers exclusive bottom drag scraper which does away with conventional hoppers. Dust is removed continuously—an important point where chemicals are to be re-used. Another feature is completely "packaged" mechanical or vacuum tube power packs which can be located in any convenient area in the plant.

PERFORMANCE GUARANTEED!

Koppers engineers protect your investment in an electrostatic precipitator by guaranteeing both the recovery or gas-cleaning efficiency and the residual content left in the gas after cleaning. Koppers-Elex electrostatic precipitators are designed, engineered, fabricated, erected and guaranteed under one contract by Koppers Company, Inc.

IF YOU HAVE A GAS-CLEANING PROBLEM, write today and outline the details for us to review. There is no obligation. Just address your letter to: KOPPERS COMPANY, INC., *Precipitator Department*, 342 Scott Street, Baltimore 3, Maryland.

KOPPERS

Koppers-Elex ELECTROSTATIC PRECIPITATORS

Now another

OF OUR PRECIOUS NATIONAL RESOURCES

IS WASTING AWAY

in your plant

It's iron and steel scrap.

Are you surprised to learn that scrap piles furnish just as much steel mill melting stock as iron mines do?

It's a fact. 50% of the melt is iron and steel scrap . . . and some of this scrap is wasting away in *your* plant.

This scrap of yours is needed to help maintain steel production so there will be enough steel for both military and civilian needs.

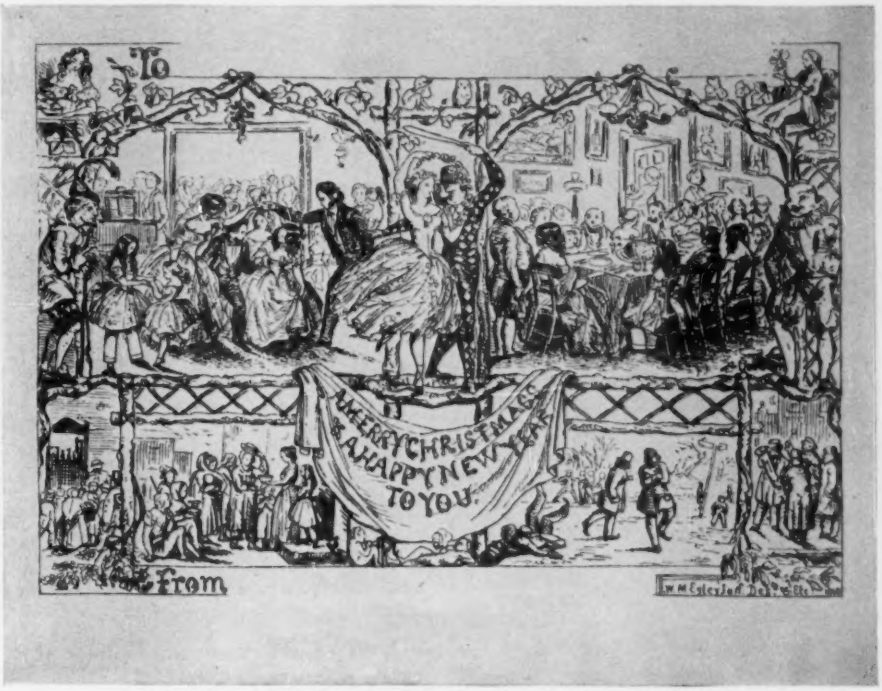
It's up to you to get idle iron and steel into the mills. Channel it through your local scrap dealer.

Don't delay. The mills need 3000 carloads of scrap a day—every pound counts in this emergency!

NON-FERROUS SCRAP IS NEEDED, TOO!

This advertisement is a contribution, in the national interest, by

PULP & PAPER



Facsimile of the first-known Christmas Greeting Card. Original now on display in the British Museum in London.

The First Christmas Card

When, in 1842, William Maw Egley, a young London engraver's apprentice, produced the first-known Christmas card, he started what was destined to become both a popular custom and a major industry. While the Christmas card originated in England, the sending and receiving of greeting cards has attained its greatest popularity in America. Today more than two hundred greeting card publishers produce more than three billion cards annually. It is estimated that nearly one hundred million dollars is now spent each year to mail greeting cards of all types and for all occasions—a sum representing approximately ten percent of the Government's first-class mail revenue.

In reaching such a vast volume, greeting cards have become one of the largest users of paper, and thus have made an important contribution to the swift, continuous growth of America's pulp and paper industry.

The dramatic story of paper is told in the sound-and-color film, "Paper — Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.

HUYCK *Felts*

F. C. HUYCK & SONS · *Kenwood Mills* · RENSSELAER, N. Y.

Pacific Coast Representative: Pacific Coast Supply Co., Public Service Building, Portland, Ore.; 343 Sansome St., San Francisco, Calif.

This 'dust' man is worth his weight in gold–to you

He is the man behind more efficient Soda Ash recovery, better Plant-Community Relations.

There are still many executives in the paper industry who have yet to sit across the desk from an industrial dust engineer–a man who may be actually worth his weight in gold to you.

If you are one of these men, you have a revealing half-hour in store–a half-hour that can show you the most efficient, low-cost way to recover valuable escaping Soda Ash…to eliminate the escape of objectionable fly ash…to boost plant-community relations.

The reason? Buell's staff of industrial 'dust' men draw on more than 200 man-years of experience in the design and construction of high-efficiency, trouble-free Dust Recovery and Collection Systems. You will learn of the success of hundreds of Buell Installations. You will learn how one can be designed for you.

Large installation of Buell van Tongeren Cyclones collecting fly ash from boilers at a paper plant.

For full information about Buell Dust Collection and Dust Recovery Systems, write today. Ask for the new illustrated Buell 'Dust Recovery' bulletin. It can be a highly profitable move. Buell Engineering Company, Dept. 24L, 70 Pine Street, New York 5, N. Y.

ELECTRIC CYCLONIC

buell

ENGINEERED EFFICIENCY IN **DUST COLLECTION**

HIGH EFFICIENCY CYCLONES • ELECTRIC PRECIPITATORS
TYPE 'LR' COLLECTORS • LOW DRAFT LOSS COLLECTORS
SPECIAL PURPOSE COLLECTORS • DUST HOPPER VALVES

Camachine Type 18 is one of the four great Camachine mill-type winders. The Type 18 is dynamically balanced to the maximum speed of 2500 fpm. The Type 18 may be built to your choice of 42", 60" or 72" maximum rewind diameter, for trim widths ranging from 73" to 150". The Type 18 may be equipped for score-cut slitting, using air-operated slitter units, or for shear-cut slitting.

Send for Bulletin 3010

Consider the SPEED

The four great mill-type Camachines (Types 14, 18, 19 and 20) offer a choice of maximum speeds ranging from 1800 fpm on Type 14 to 5000 fpm on Type 20, depending upon characteristics of the material, number of cuts, web tension and machine width.

Consider the ECONOMY

Four great, job-proved mill winders offer you a choice of the model best suited for low-cost, dependable performance in your plant. That's one good reason why more than 400 paper and paperboard mills in the United States have chosen Camachines.

Consider the VERSATILITY

Rolls produced on Camachines include over 80 different product classifications of paper and paperboard, from newsprint to roofing paper, in trim widths ranging from 53" to 310".

Consider the ROLL QUALITY

Automatic counterweighting, sensitive tension controls, built-in alignment, and dynamic balance are among the many features which assure clean-cut uniformly wound, top-quality rolls in all mill type Camachines.

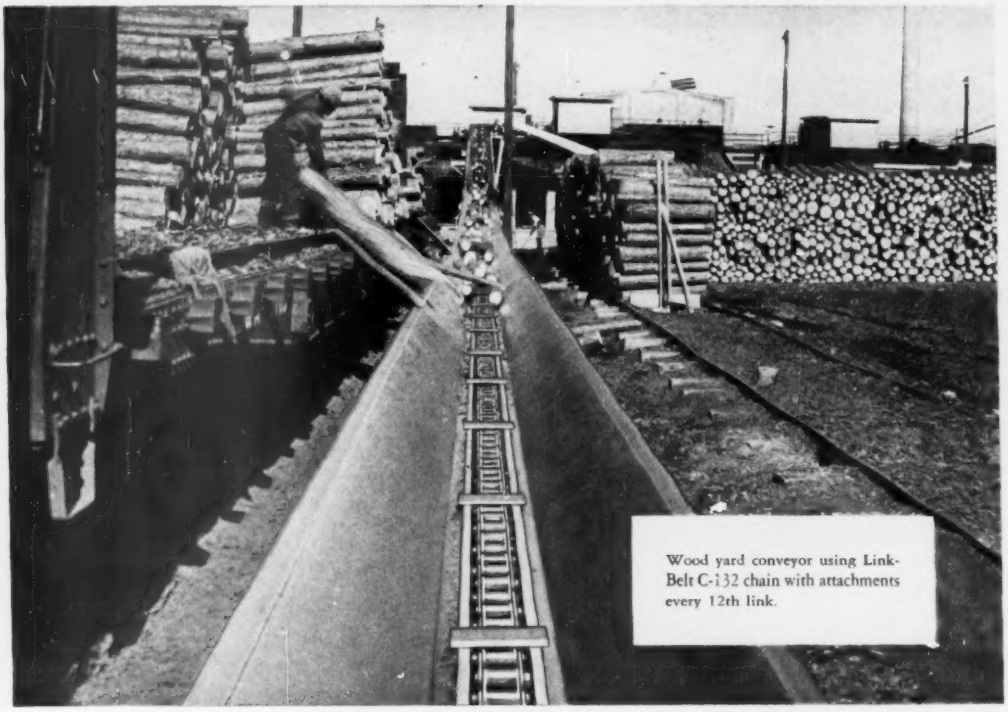
Consider the FACTS and you'll wind up with Camachines®

CAMERON MACHINE COMPANY
61 Poplar Street, Brooklyn 2, New York

PACIFIC COAST SUPPLY COMPANY • PUBLIC SERVICE BUILDING, PORTLAND 4, ORE. • 260 CALIFORNIA ST., SAN FRANCISCO 19, CAL.

No ONE chain serves every purpose

LINK-BELT makes all types of chains



Wood yard conveyor using Link-Belt C-132 chain with attachments every 12th link.

...recommends the right one for your job

Typical chains from the complete Link-Belt line

Class H drag chain—for drag conveyors, handling materials and refuse in runways or troughs.

Class 400 pintle chain—cast links with closed pin joint, for light conveyor, elevator or drive duty.

Class SS bushed roller chain with offset sidebars—for heavy drive service at moderate speeds.

Class C combination chain—popular, durable, low cost design for elevators, conveyors.

More than strength—more than length—all operating qualities are taken into consideration by Link-Belt engineers when they recommend a chain for your job. From the world's most complete line of chains, they can select the *right type* to meet your specific requirements—large or small. Link-Belt builds them all. And all are built to the highest standards. Exact control of materials and manufacturing processes is your assurance of longer chain life. 32.327-C

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities.

LINK-BELT

CHAINS AND SPROCKETS

patent pending

A better way to wash pulps!

The use of pressure to wash pulp, instead of the vacuum or diffusion principle, has been under development for many years. Now, climaxing this research, the Pressure Washing System is offered to the industry as a commercially-proved method, applicable to both chemical and semi-chemical pulps. Here are some of the advantages it offers you:

High capacity—***300 A.D. tons per day plus***

Low power requirements

Low water consumption

Extremely flexible installation

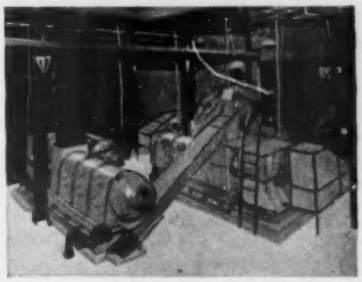
Low capital investment

Low maintenance costs

Low labor costs

No foam

Clean pulp—***to meet any specifications***



A three-stage washing installation on kraft. Pulp passes through the press on left, up inclined screw conveyer, and through press in center. Final press is shown in rear.

Last, but not least, Pressure Washing offers reduction of stream pollution and savings in evaporator costs that are unparalleled. Systems can be furnished in two, three, and four stages to fit individual mill requirements. Write for complete information on this revolutionary development.

Designed & Engineered by

SUTHERLAND, Inc.

Sales & Service

SUTHERLAND REFINER CORP.

Trenton 8, N. J.

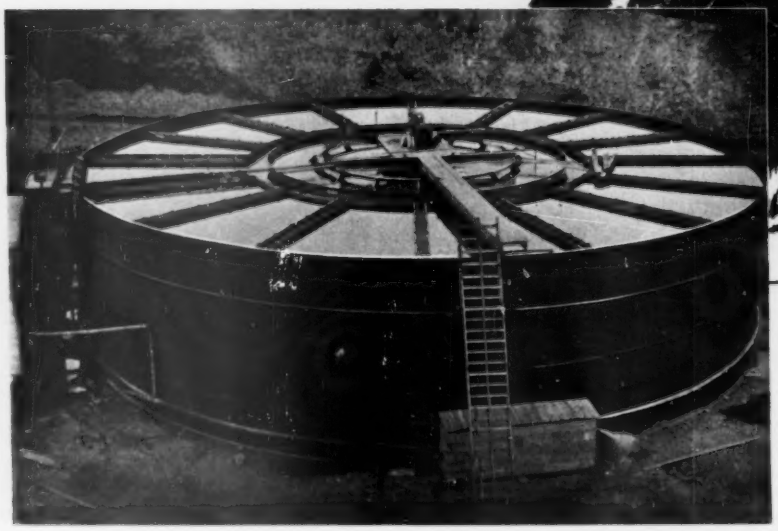
Manufactured by VALLEY IRON WORKS CO., Appleton, Wisconsin

Accelator® *makes Clearwater River really clear for Potlatch Forests*

No further water treatment needed in this model Kraft mill at Lewiston, Idaho

Potlatch Forest Industries, Inc., uses the effluent from this 92-foot Accelator for making high-quality bleached Kraft paperboard and tag stock — with *no* further treatment. The mill, first of its kind in the Rocky Mountain States, has attracted nation-wide attention for its modern design. Infilco technical men cooperated with mill and consulting engineers in setting up modern treatment facilities.

Use Infilco Technical Cooperation Service In Your Planning



ACCELATOR:

REDUCES IRON TO .1 p.p.m. or less

HANDLES TURBIDITIES RANGING FROM 10 to 600 p.p.m.

REDUCES COLOR TO 10 or less

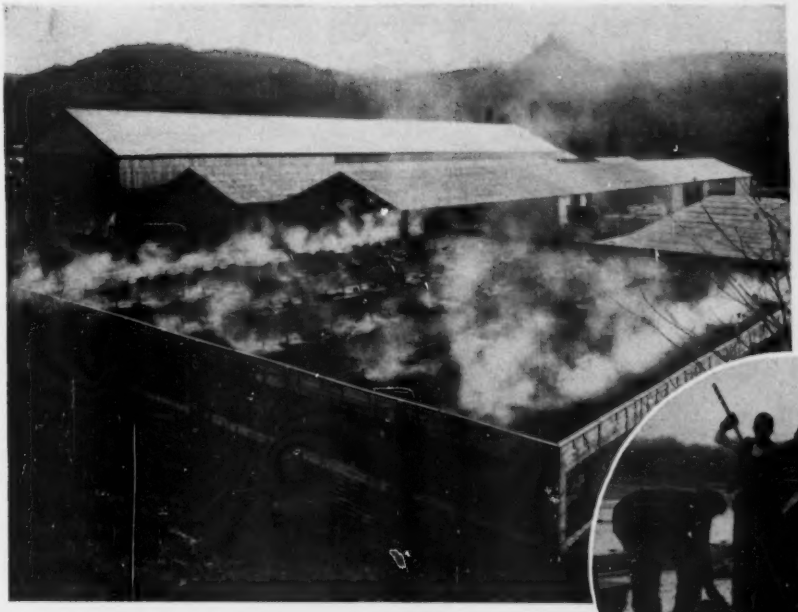
TREATS 12,500 g.p.m. IN ONLY 92 FT. DIAMETER

INFILCO — BETTER WATER CONDITIONING AND WASTE TREATMENT SINCE 1894

INFILCO INCORPORATED | *Tucson, Arizona*

FIELD ENGINEERING OFFICES IN 26 PRINCIPAL CITIES

World's Leading Manufacturers of Water Conditioning and Waste-Treating Equipment



Steam emanating from Fischer Lumber Company's dry kiln, Marcola, Ore.

Roofing Contractor:
Ira O. Williams Roofing Company

Roof Deck:
Poured Concrete

Insulation:
Fiberglas Roof Insulation

Saves Fuel...AND ROOF MAINTENANCE COSTS

Here's an application that proves FIBERGLAS* ROOF INSULATION's superiority. Interior temperatures in the pictured dry kiln ranging from 150° to 190° F. and yet . . . ICE STILL FORMS ON TOP OF THE ROOF!!

You'll find Fiberglas Roof Insulation excellent for severe conditions of this nature. We'll gladly certify to its insulating value as listed below:

Thickness of Board	½"	¾"	1"	1¼"	1½"	2"
Thermal Conductance	.50	.33	.25	.20	.17	.13

These exceptionally low thermal conductances mean SUBSTANTIAL SAVINGS IN FUEL CONSUMPTION TO YOU. Lower roof maintenance costs are assured, too.

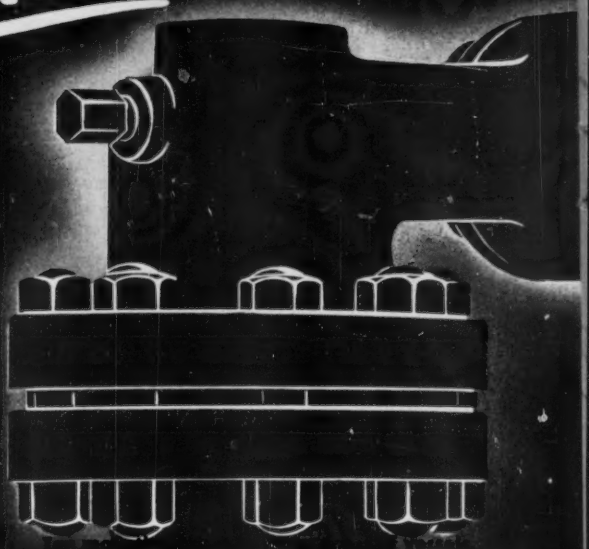
Made of ageless FIBERS of GLASS which are unaffected by possible dampness, Fiberglas Roof Insulation will not rot or decay, swell or shrink. Other plus values: INCOMBUSTIBLE—LIGHTWEIGHT AND EASY TO HANDLE—PROVIDES HARD, SMOOTH MOPPING SURFACE.

WESTERN STATES SALES OFFICES: Albuquerque, Denver, El Paso, Eugene, Fresno, Los Angeles, Phoenix, Portland, Sacramento, Salt Lake City, San Diego, San Francisco, San Jose, Seattle.

Pacific Coast Division of OWENS-CORNING FIBERGLAS SANTA CLARA, CALIFORNIA

*Fiberglas is the trade-mark (Reg. U. S. Pat. Off.) of the Owens-Corning Fiberglas Corporation for a variety of products made of or with fibers of glass.

Look at the Whole Picture...



WHEN SELECTING LEVEL CONTROLLERS

Use the C_Q Method—Evaluate All the Quality Factors

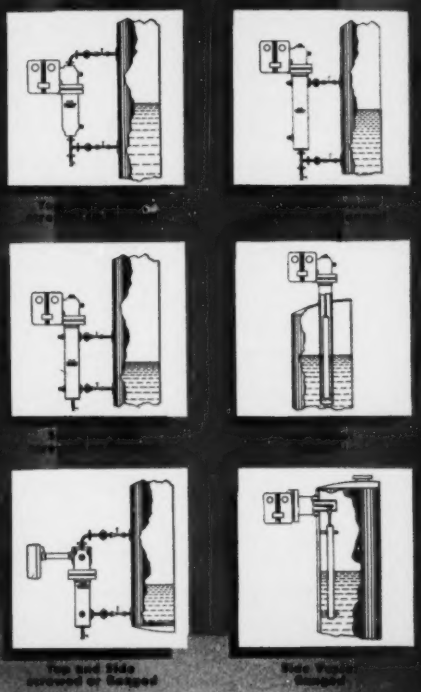
One well designed and manufactured part does not make a level controller that will "provide accurate performance over a long period with a minimum of maintenance and operation delays." *Every* part must be designed and manufactured so that all combine to make a controller which incorporates wise selection of materials for the intended service; skillful design for accurate operation; and experience which forestalls the difficulties you are likely to encounter in the field.

So in selecting level controllers, use the C_Q Method — evaluate *all* the quality factors in relation to your standards. The sum of the value of all these factors is the C_Q (Quality Coefficient). A product with a high C_Q will give you the performance you have a right to expect. And in considering price, don't forget the over-all cost* is lowest for a high C_Q product. For comparison purposes — among comparably priced controllers

$$\text{Real Cost} = \frac{\text{Price}}{C_Q}$$

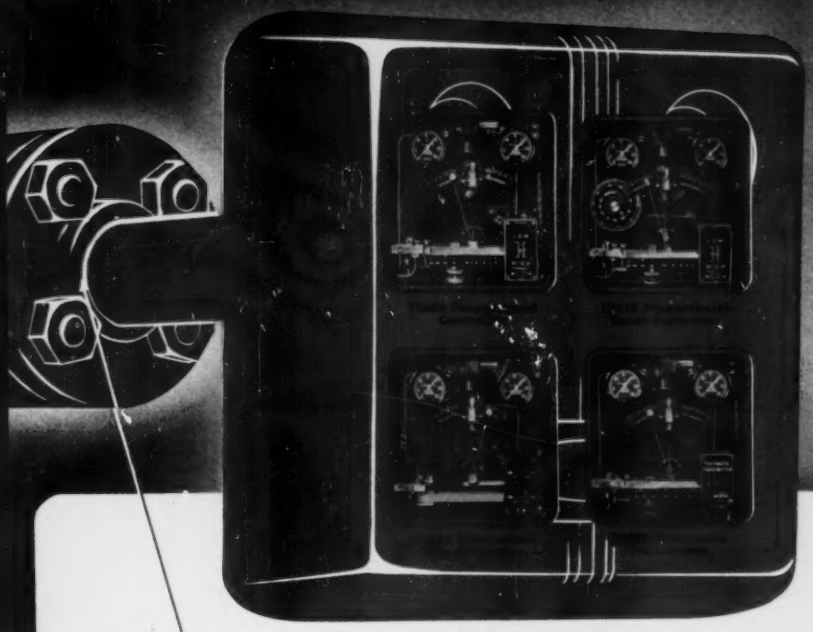
Look at the whole picture — use the C_Q Method — evaluate *all* the quality factors.

**Purchase price plus cost of maintenance and down-time.*



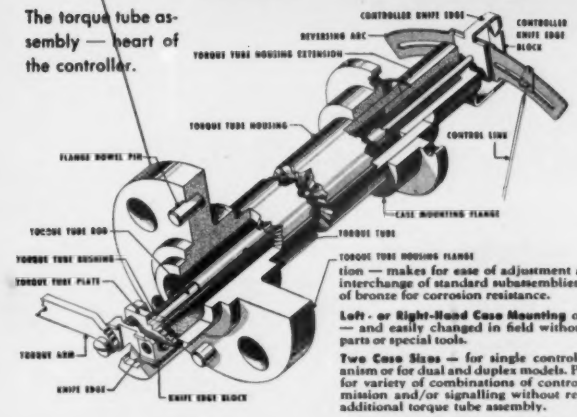
THE MASONEILAN 12000 SERIES LEVEL CONTROLLERS

A High C_Q Product



Three Standard controller types and the transmitter (also pneumatic switch) in the standard case; dual or duplex combinations of these in a larger case.

The torque tube assembly — heart of the controller.



Note the Quality Factors of the Masoneilan 12000 Series Level Controllers

Sturdy Instrument Case with ribbed reinforcements to prevent distortion due to temperature and handling which might create inaccuracy in control mechanism. Aluminum with Weatherproof finish and Gasketed door — protect against effects of weather and corrosive atmospheric conditions.

One Piece Air Manifold eliminates much of air piping inside case — simplifies construction — makes for ease of adjustment and for interchange of standard subassemblies. Made of bronze for corrosion resistance.

Left- or Right-Hand Case Mounting optional — and easily changed in field without extra parts or special tools.

Two Case Sizes — for single control mechanism or for dual and duplex models. Provides for variety of combinations of control transmission and/or signalling without requiring additional torque tube assembly.

Large Capacity Relay-type Pilot: Design insures instant response to variations in nozzle pressure. Includes metering tube for constant nozzle supply. Fastening directly to manifold avoids air piping. Uses minimum air supply.

Simple Proportioning Mechanism: Minimum number of parts, simplified linkage, use of proportional leaf spring — insure instantaneous response. All adjustments simple, with clearly visible scales. Action reversible by one simple adjustment. Proportional band setting independent of specific gravity; scale provides wider graduation spacing in lower settings; causes minimum upset to process because alignment spring, leaf spring and proportional bellows forces in equilibrium at midpoint of output pressure range. Simplified linkage and flexure bearings eliminate lost motion.

Automatic Reset Mechanism: Adds reset response to proportional response. Simple unit adjustable over spiral scale with wider graduation spacing in lower reset rate settings.

Differential Gap Mechanism: Substitutes proportional on-off action for standard proportional action. Provides for adjustable gap between high and low limits.

Selection of Supplementary Functions: Design provides for pneumatic transmitter, pneumatic or mechanical signal switch using same torque tube and displacer assemblies.

Dual and Duplex Types: Selection of combinations of control mechanisms, controller plus transmitter, controller plus switch, etc. — in *one case*; using only *one torque tube assembly*.

Simple Mechanical Indicator inside case provides serviceman with reliable, direct indication of level; has no complicated linkage — requires no field calibration.

Torque Tube Assembly design provides (a) selection of materials — inconel, monel, stainless steel, bronze.

(b) all parts of torque tube subassembly of same alloy — avoids contamination of the weld.

(c) fabrication by latest type inert arc welding equipment and methods.

(d) knife-edge bearing at each end insures true center of rotation — cannot be off-centered by high temperature or practical tolerances in fabrication — eliminates objectionable friction.

(e) Torque tube length, wall thickness and diameter selected for most desirable combination of low operating stress and load carrying ability.

Displacer Hanger has modified knife-edge bearing at connection to torque arm. Integral or detachable extensions available for internal mounted displacers.

Displacers made of stainless steel tubing; designed so that standard control mechanisms may be used without modification, for all applications.

Selection of Mounting Types available to meet all vessel requirements. Choice of 9 Level Ranges between 14" and 15 ft. (standard). Special ranges may be supplied.

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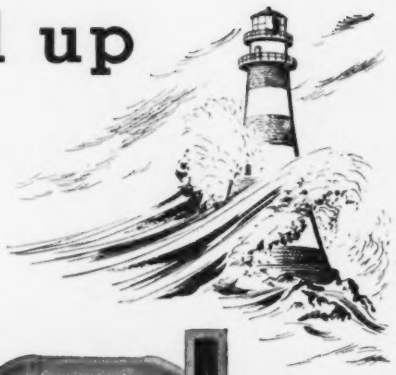
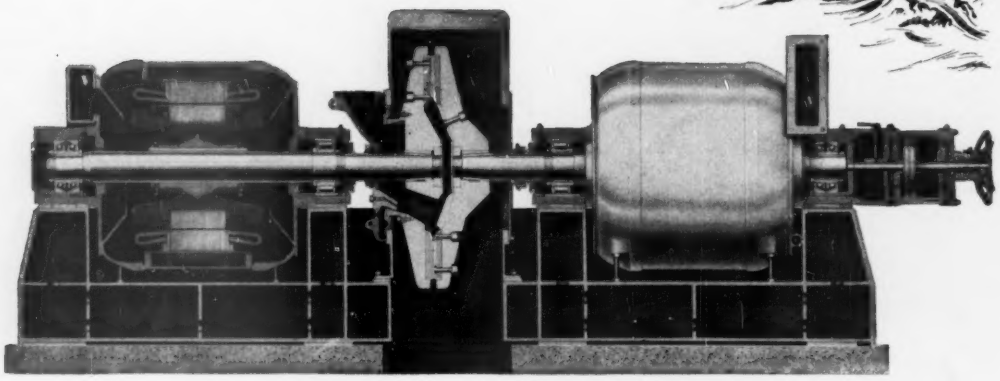
Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Salt Lake City • El Paso • Boise Albuquerque • Charlotte • Los Angeles • Denver • Appleton • Corpus Christi • New Orleans

Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

built to stand up

and take it





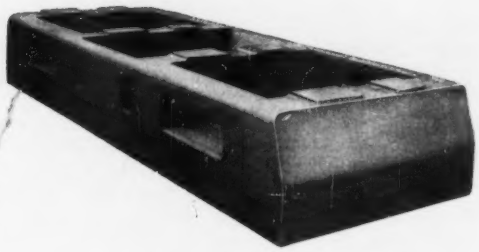
Bauer Disk Refiners

When you watch the smooth operation of a Bauer Disk Refiner, you can hardly realize that so much work is being done with seemingly so little effort.

Only super-rugged construction can stand up and take the punishment to which such a machine is subjected. And that's where the Bauer Disk Refiner proves its superiority, year in and year out, in hundreds of pulp and paper mills all over the world.

Look at the stalwart base . . . fabricated of heavy welded steel . . . unyielding to thermal and mechanical stresses . . . relatively as sturdy as the foundation of a lighthouse.

The base is so strong and substantial that there is no distortion to cause misalignment of shafts and bearings. Not even bolted to a foundation, the base rests securely on leveling wedges.



While you will be interested in the design, we believe you will be more interested in the performance of Bauer Disk Refiners. So let us discuss their merits for your job. We'll be glad to make refining tests for you in the Fiber Products Laboratory or send one of our engineers to consult with you. *Write, wire or phone us.*

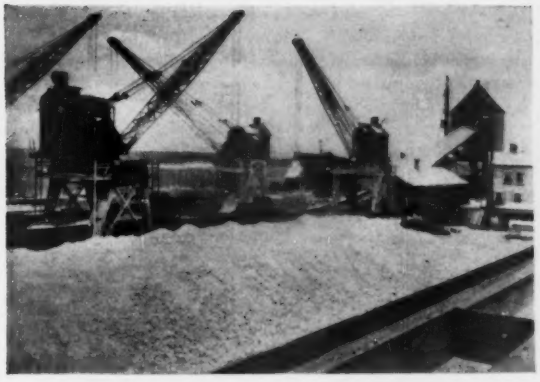
THE BAUER BROS. CO.
Established 1878

1706 Sheridan Ave.
Springfield, Ohio

SULPHUR

*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

*LOADING



Sulphur intended for vessel shipment is brought to Galveston by rail from the mines at Newgulf. It is transferred directly from cars or from storage bins to the vessel.

The loading plant consists of two parallel storage bins spaced far enough apart to allow room for railroad tracks, tracks for the hoppers and cranes, and an endless conveyor belt. The belt along the center line between the bins is straddled by four cranes and their movable hoppers.

The cranes pick up the sulphur from the bins or cars and discharge into the hoppers, which automatically feed the belt. It is weighed while on this moving belt. After weighing it is discharged onto a smaller belt which in turn discharges through a cylindrical telescopic spout directly into the vessel's hold.

Loading operations at our Newgulf, Texas mine

TEXAS GULF SULPHUR CO. INC.

75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

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You can handle bigger loads . . . get out more logs per day and per season with an Oliver Crawler Tractor and Carco Logging Sulky. The terrific resistance caused by logs burying the butt ends in the ground, so common in ground-skidding, is completely eliminated. The full tractor power can be utilized to haul the logs . . . is not wasted in overcoming the "burying" action.

The smooth, accurate turning you get with the exclusive Oliver steering principle assures easiest operation in the woods. There is no need for time-wasting, operator-tiring "jackknifing"!

You'll find you'll save on fuel costs with this logging outfit. And, an important point, remember the high clearance of Oliver Tractors lets you operate in muddy conditions that would quickly mire down the ordinary tractor.

For all the facts on these aids to profitable logging, see your Oliver Industrial Distributor. The Oliver Corporation, Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio.

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to all world markets

Parsons & Whittemore

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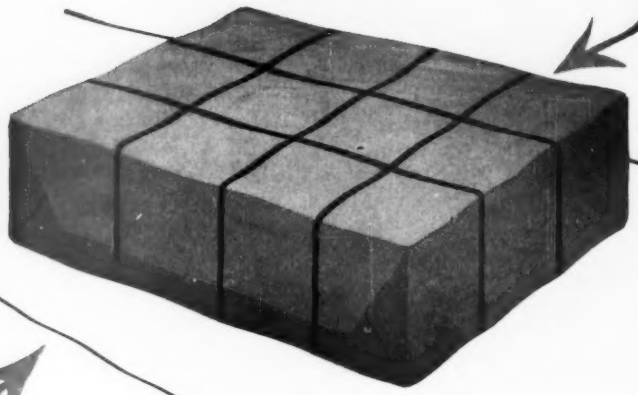
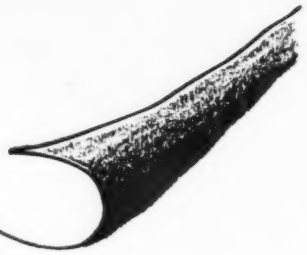
wood pulp





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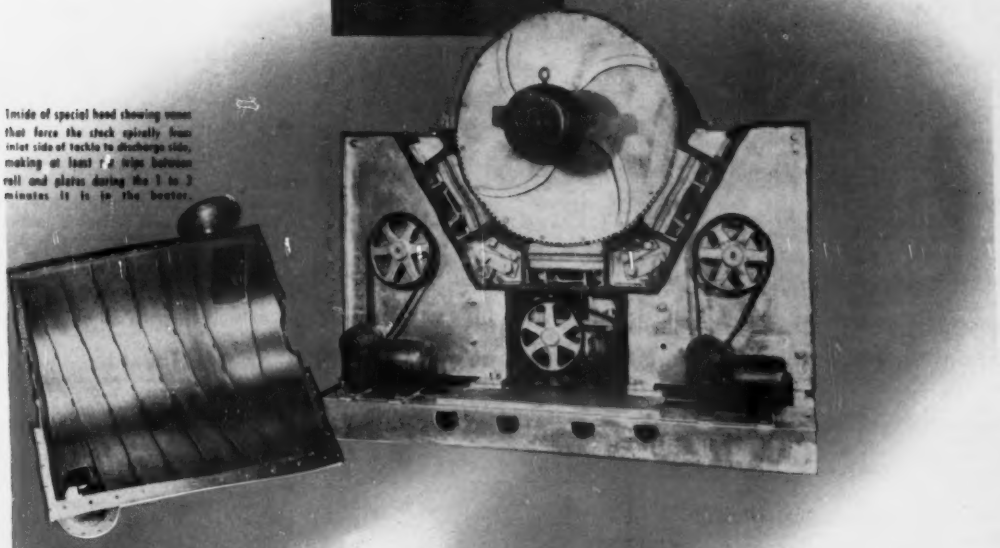


Inside of special hood showing vanes that force the stock spirally from inlet side of tackle to discharge side, making at least 7 4 trips between roll and plates during the 1 to 3 minutes it is in the beater.

The new Midwest-Smith beater is a new type of precision machine for the hydration and brushing of all types of fiber. With it the maximum required mullen, tensile and tear characteristics can be developed on a continuous basis.

It features a special roll in a totally enclosed housing, three bed plates, each independently adjustable to the roll; a special kind of hood; and automatic controls.

The stock enters under pressure at the top thru a vertical nozzle, makes the required passes between roll and plates and discharges thru a horizontal nozzle, also shown in the cut.

The stock does not spread clear across the face of the roll and plates in its travel as might be expected. Rather, spirally arranged vanes in the hood impart a definite spiral motion and the stock is forced to make at least eight independent trips under the roll and across each of three plates on its way to the discharge on the opposite side from the inlet.

The cycle is from 1 to 3 minutes during which time the stock is alternately compressed and released and receives a tremendous amount of hydrating and brushing.

The power factor is low because the roll does no circulating and there is no bar to bar contact. The replacement outlay for tackle is also low.

Both of these economies should particularly interest mills on kraft and semi-chemical pulps where larger numbers of jordans or disc refiners are normally required.

Capacity 50 to 100 tons, depending upon type of fiber being refined, freeness sought and tonnage required.

Fully assembled ready to install except for drive which may be flat belt, V-belt, or chain type.

Complete description on request.

MIDWEST·FULTON MACHINE CO., DAYTON 3, OHIO

MgO FOR ALASKA MILL!

WHO SAID THERE WILL BE NO MORE SULFITE MILLS BUILT?

Ketchikan Pulp & Paper Co., of Bellingham, Wash., has finally decided that its government-approved $40,000,000 project at Ward's Cove, Alaska, will be a *SULFITE* pulp mill, but with magnesium oxide used in place of calcium oxide as the base of the cooking liquor.

There will be chemicals (magnesium oxide and sulfure dioxide) and waste heat energy recovered for re-use in the process and power plant, respectively, as was stated in the first detailed story on the Alaska project in Sept. 1951 PULP & PAPER, page 46.

This will be the second commercial MgO recovery plant built in the history of this industry. The first one, still operating, was started up in Oct. 1948 at Longview, Wash., by Weyerhaeuser Timber Co., and will be the basic model for the Alaska plant (description in PULP & PAPER, Nov. 1948).

Weyerhaeuser, Howard Smith Paper Mills of Canada and Babcock & Wilcox Co. are joint patentees, and B & W Co., 85 Liberty St., New York 6, N. Y., is exclusive licensing agent for this process.

UNION BAG'S "CHRISTMAS TREE"

Will Be First 3-Extraction Unit in All Industry; Expansion Makes UB Leader in Self-Generated Power

If Union Bag & Paper Corp., in Savannah, Ga., does not already have the largest concentration of self-generated power in the world for an industry (it may be trailing one or two of big newsprint operations in Canada at present), it most certainly will have when its new "Christmas Tree" turbine goes in.

That's the nickname that Gunnar Nicholson, manufacturing v. p. has given to the unique new No. 6 General Electric 1200 lbs. pressure, 950° F. T. T. turbine, because of the way the controls will flash when it goes into operation, probably by next March. General Electric officials said it will be shipped before Christmas.

No. 5 turbine at Union Bag, only recently installed, was the first high pressure turbine in the paper industry to be rated at 1200 lbs. No. 6 will not only match that, but it will be *the first triple automatic extraction turbine in any industry.*

Mr. Nicholson told a few facts about this turbine at a press conference in connection with mill tours for delegates to the Engineering Conference in Savannah.

Eventually—2,000 Tons a Day

He outlined an "A" program of expansion that will bring Union Bag from 1250 tons a day of production to a record 1,750 tons by Aug. 1953. This includes a semichemical neutral sulfite plant for hardwoods, to make 300 tons a day corrugating medium.

Beyond this is the "B" program—calling for another turbine—and this will bring Union Bag to a world record production capacity of 2,000 tons a day. It will include another 100 tons of semichemical.

But to get back to the "Christmas Tree." PULP & PAPER asked General Electric officials for some further data on it. Total kilowatts per day will be brought to 59,000 kw for the entire UB establishment, including a 6th big 236 in Pusey-jones paper machine, bag plant (which has made 1,000 tons or 40 million bags a day) and box plant. (The new machine will be rated at 2,000 f.p.m.—all present machines will be brought to 1,600 f.m.p. by 1952).

The economies of coming in with two units of 1,200 lbs. pressure were justified. As in other mills electric power consumption was increasing faster than steam consumption. The No. 5 turbine now in, which is the only topping unit in the South, was tieing in the 1200 lb. system in with an existing 400 lb. system. Now, in order to tie the existing 400 lb. system of turbines in with the others, the new No. 6 will have automatic extraction and admission of 400 lbs.; another automatic extraction at 150 lbs. and another automatic extraction at 80 lbs. It also will have at 200 lbs., uncontrolled extraction or bleed. And this new unit also will be a condensing turbine.

Line of 34 Digesters

Under "A" program, U B will have 34 digesters—all in a line. There will be six carbon-brick lined for semichemical and eight new kraft digester, possibly Inconel or stanless steel 100% lined as such linings are being now tested on plant scale. Also a new Combustion Engineering 350 ton recovery boiler; a 7 effect Goslin Birmingham evaporator, new screens, deckers and wood room and caustic plant additions, and a 265 ft. long Allis Chalmers lime kiln already installed. In the new power set-up the plant can use either coal or oil. Bought fuel is 45% of the total; 15% from burning bark; 40% from black liquor.

The semichemical plant, besides the batch process digesters, will have 9 new Sprout Waldron refiners (five before washing and four after washing); two four-stage Swenson-Nyman washers 9 x 16 ft. of 400 tons capacity and two large 8 x 16 Impco deckers and Impco screens. Mostly gumwood will be used.

With the semichemical plant, U B expects to make one ton of pulp from a cord of wood, instead of its present softwood draft ratio of 1.6 cords to a ton.

Union Bag eventually will use 1,000 000 cords of wood a year instead of its present 850,000 cords. It now uses 20% of its own wood, buys the rest. It owns, leases or has option to buy three-quarters of a million acres in Georgia, South Carolina and Florida.

Machine No. 6

About that new No. 6 machine, same size and make as the other five. It gets Valley Iron Works headbox, two Simplex presses, will be served by E. D. Jones & Sons jordans now installed, and will make multiwall kraft, asphalt coating and laminating.

With the Sprout Waldrons coming in for semichem, U B has a variety of pulp preparation units to tie into various machines. Dilts Hydrapulper, Jones Bertram beaters and jordans and ten Sutherland Refiners, now used mostly on No. 4 board machine are the others.

"TAL PADRE—TAL HIJO—"
"—LIKE FATHER—LIKE SON"

SONS OF HEADS OF PAPER COMPANIES, both born on Long Island, who are gaining valuable industry experience in the South are: JOHN K. FERGUSON (left), son of Roy K. Ferguson, Pres. and Chairman of St. Regis, and GEORGE E. DYKE, JR. (right), son of Pres. of Robt. Gair Co. and Pres. and Chairman of Southern Paperboard. John is Owners' Representative with Contractors at St. Regis mill project in Jacksonville, Fla., where his offices are in Atlantic Bank Bldg. A Marine Sergeant in Pacific War, he returned to graduate from Syracuse in '46. Previously attended Principia College in Illinois, and was Business Mgr. of Brooklyn Dodgers' farm baseball club at Meridian, Miss. He was recently St. Regis Lumber Div. Mgr. at Pensacola and was in the Sewanee Forest two years.
Young George Dyke is with J. E. Sirrine Co., South Carolina engineers, now their Res. Engineer for new Riegel Carolina mill and previously was at Coosa River. Class of '44 in Dartmouth, he served in Navy in Philippines in war.

Paper Week And Annual Coating Meeting

Important 1952 dates:

Paper Week—APPA, TAPPI and other meetings at the Commodore and Waldorf-Astoria, New York City, Feb. 17-21.

Third Coating Conference of the Paper Industry at Sherman Hotel, Chicago, May 5-8.

Howard Smith to Build Kraft Mill at Crabtree

Howard Smith Paper Mills plans to build an $8.5 million Kraft pulp mill with annual capacity of 40,000 tons at Crabtree Mills, Que. Most of the output will be used at that point, although some will be for sale.

A BLUE RIBBON MEETING OF INDUSTRY, Savannah brought together many leading engineers and others, including (left to right): R. P. "TOM" PRICE, Vice Pres. and Gen. Supt. of Hammermill Paper Co. and TAPPI Exec. Committee, who years ago had an interlude in Italy engineering a racing car industry.

GEO. H. FERGUSON, Consulting and Designing Engineer of the Alvin H. Johnson & Co. Inc., New York, who has figured in expansion at Calcasieu and other mills recently, including pulp mill, woodyard and boiler plant for St. Regis, Jacksonville, Fla.

BORIS R. RUBENS, Construction Engineer of Seattle, Wash., (Stevenson & Rubens), who has been associated with Chief Engineer Justin McCarthy of St. Regis in building the new paper mills at Tacoma, Wash., and now at Jacksonville, Fla.

MAHLON V. MOLSBERRY, Wisconsin Rapids, Wis., Chief Engineer for all Consolidated Water Power & Paper Co. mills. Iowa-born and Iowa State graduate of 1924, he was formerly a General Electric specialist, has been with the Mead organization since 1937.

WM. A. J. MITCHELL, Manager and Chief Engineer of Central States Engineering, Inc., Appleton, Wis., a former Kimberly-Clark engineer, who now heads a staff of consulting engineers on projects for Rhinelander, Hoberg and other mills.

J. J. HARRISON, Tech. Director and Chief Chemist, Michigan Carton Co., Battle Creek, Mich., one of industry's big board producers which outgrew its Kellogg Corn Flakes start.

S. B. MILLIGAN and **DONALD L. CALKINS,** two of Construction Engineers on Union Bag & Paper Corp.'s vast expansion program at Savannah. The program still has two years to go and involves a staff of about 60 U B engineers entirely on construction.

A SAVANNAH SET

A NEW CHAIRMAN

A New Chairman and Others at Conference (l to r):

HARTLEY R. ARNOLD, who was named TAPPI's new Steam & Power Committee Chairman when C. J. Sibler advanced to Engineering General Chairman. Mr. Arnold, Plant Engineer now for Riegel Carolina Corp.'s new mill, was Power Engineer for 11 years at U. B., came from Massachusetts; for 15 years with Florida Power.

JERRY HAGE, Chief Engineer of River Raisin Paper Co., Monroe, Mich., was formerly at Nekoosa-Edwards where his father was Electrical Engineer, and went to U. of Wisconsin.

W. S. "PAT" YUNKER, headquartering in South for Sutherland Refiner Corp., serving as sales rep. and instrument specialist for that Trenton, N. J. company. Mr. Yunker has long served in South.

J. D. MALCOLMSON, Technical Director for all Robert Gair Co. Inc., with headquarters at 155 East 44th St., New York, reclines at Oglethorpe hotel swimming pool—a "fish out of water" with the engineers, maybe? Not so you would notice.

CLARK GALLAGHER, Supt. of Maintenance since '41 and former Chief Electrician at River Raisin Paper in Monroe, Mich., smiles contemplatively on Savannah scene. Born in Lincoln, Ill., he had engineered in refractory quarries before papermaking.

CHARLES L. WILLS, Plant Engineer from Halifax Paper Co. of Albermarle organization, at Roanoke Rapids, North Carolina.

W. J. "BILL" DARMSTADT, Assistant Mgr. under Frank E. Hutton of Pulp and Paper Industry Sales and Service, Babcock & Wilcox Co., New York City, was at both the Supts. convention at Jacksonville, Fla., and the Savannah Engineers gathering.

STARCH TRAIL—JAX TO GEORGIA

THESE ANHEUSER-BUSCH MEN made both Southern meetings—Supts. at Jacksonville and TAPPI at Savannah: **ROBERT A. LEMIEUX** (left), who bases in Johnston Bdg., Charlotte, N. C., and **KEN BATTENFIELD,** from America's biggest brewery in St. Louis. Both are in Technical Sales Service for Corn Products Dept., Mr. Battenfield's territory being all U.S., while Mr. Lemieux specializes in South.

THEY TRAVELED FAR

Among delegates who traveled farthest for Engineers Conference were F. S. MORGAN, Plant Engineer of St. Helens Pulp & Paper Co., St. Helens, Ore., and **VIRGIL M. SUTHERLING,** Chief of Engineering Division, Longview Fibre Co., Longview, Wash. Supt. Bill Shelton also was at Southern meetings for "Longfibre."

"WHEELHORSES" RETURN

Engineering Conference, of "School Age" now, brought back two of its founders who helped it in infancy:

MILTON JACOBS (left), of Chas. T. Main, Inc., Boston consulting firm, was a founding father at Milwaukee meeting six years ago, and **MORT COOPER,** Mgr. of General Industry Section, Westinghouse Corp., East Pittsburgh, made his big contribution when his firm hosted meeting at Buffalo.

SAVANNAH SCREENINGS

CHICAGO IN '52 -- WHERE TO IN '53?

MANAGEMENT TOOK PART IN SAVANNAH GOINGS-ON: Left to right: G. W. E. NICHOLSON, Vice President, Manufacturing, Union Bag & Paper Corp., New York City, on the Gen. Oglethorpe hotel porch with R. F. ERICKSON, Vice President in charge Southern Operations, Rayonier Inc., also from New York headquarters; T. T. (TAD) DUNN, Vice Pres. and Res. Mgr., Savannah Plant, Union Bag, and CHARLES M. McCARTHY, Plant Manager, Southern Paperboard Corp., Port Wentworth, Ga., jointly owned by Robt. Gair and Fort Wayne Corrugated Paper Cos. Their mills were opened to visitors; their companies entertained delegates at parties.

(Reviews of papers are published elsewhere in this issue)

In many minds in the crowded dining room, most important speech of all at the recent Fall Engineering Conference, held in a resort hotel in the turtle marsh country downriver from Savannah, was a very short one made by Gunnar Nicholson, manufacturing vice president of Union Bag & Paper Corp. When he rose to put a "period" on a luncheon address by a coal industry spokesman, Mr. Nicholson said:

"The time is coming when black liquor will *not* be used for fuel. The lignin will be used for other purposes. So will bark, and already valuable chemicals are being extracted from the bark."

What made it seem important to many listeners was not only *what* was said, but *who* said it. It was far from being a theory advanced by some outside or minor observer of this industry. What Mr. Nicholson did *not* say—though he knows it to be perfectly true—is that there is an end of the road, fast being neared, in the use of waste wood for fuel, too. . . .

Another Nicholsonian comment at the luncheon: "We won't expect to run our mills from atomic energy. But we may from solar energy."

The principal speaker, Julian E. Tobey of Appalachian Coals Inc., said a survey of 283 boilers in 37 Southern mills indicated (1) more study should be given possible use of toping turbines (the only one installed in the South now giving excellent results at Union Bag), (2) more use of larger and fewer boiler units has advantages, and (3) a shortage of induced drafts is most common limiting factor.

Trends he noted were toward (1) higher pressures and temperatures, (2) multiple fuels burning, (3) use of spreader stokers with moving grates for bark burning, (4) lower index pulverized coal is used, and (5) steam from chemical recovery and bark burning averages 49% of needs. Of other fuels, 50% is coal, 26% oil, the rest natural gas.

ENGINEERS' NEW "TOP BRASS"

CHARLES J. SIBLER (left), Swiss-born Chief Engineer of West Virginia Pulp & Paper Co., is new General Chairman of TAPPI's Engineering Division.

WALTER C. BLOOMQUIST (right), Minnesota-born G. E. & Application Engineer, is the Division's new General Secretary. They pick up torches passed on by George Pringle of Mead and J. W. Hemphill of Johns-Manville. Mr. Sibler, who came to the U.S. 25 years ago, starting with G E, went to West Va. as Supervisor of Power, now is Chief for all their mills, with headquarters at 230 Park Avenue. Mr. Bloomquist, with G E since 1935 is now in its Industrial Power Division in Schenectady, N. Y.

The pulp and paper industry, he said, operates more full load hours than any other industry or utility; its boiler rooms are better operated and better maintained than any other. . . .

The TAPPI Engineering Committee, which in six years has built this conference up to be a "blue ribbon" event of the year and the industry, now has new leaders. There was a bit of a sentimental tug in the hearts of many when it was announced that their chairman and secretary were resigning. George H. Pringle, Mead's chief engineer, however, has only a little over a year of grace before he is expected to move up from TAPPI vice president to president. And as for J. W. "Bumps" Hemphill, who is Johns-Manville's "Mr. Pulp and Paper," though finally resigning as the secretary, is not expected by any one to really quit. He has probably started more innovations in association affairs than anyone else in the industry and many friends feel he would be lost if he made too abrupt a departure. . . .

THEY RESIGNED

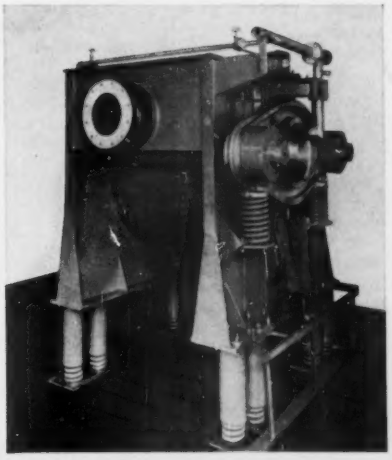
GEORGE H. PRINGLE (left), Chief Engineer for all Mead mills, based Chillicothe, O., and J. W. "BUMPS" HEMPHILL, Johns-Manville Sales Corp., New York, resigned key posts of General Chairman and General Secretary of TAPPI Engineering Division. Key men in creating and building up the annual Engineering Conferences in recent years, they decided it was time to pass the torch to new leaders. But Mr. Pringle has just a little over a year to catch his second wind, before TAPPI is expected to ask him to accept its Presidency.

But hail to the new. . . . A native of Zurich, Switzerland, who has been in the U. S. just since 1920, is the new national chairman of the Engineers. Charles J. Sibler, now chief engineer of West Virginia Pulp & Paper Co., was their supervisor of power just a few years ago. Educated in the Federal Polytechnique Institute in Switzerland, he was so impartial in starting a new career in this country that he worked with both G. E. and Westinghouse, then with the Brooklyn Edison Co. and with public utilities, a specialist in turbine design engineering. Then he went to Foster Wheeler and was assistant manager of its steam division before joining West Va. . . .

Walter C. Bloomquist, who is the new secretary of the Engineers, saw first light of day in Chisholm, Minn., and was a

(Continued on Page 48)

Keep that word VIBROTOR in the back of your head



The Bird *Vibrotor* Screen, employing slotted, undercut screen plates, is a good thing to call to mind if, as and when you're interested in

High Capacity — 50 to 80 tons of well screened stock per day

High Consistency — readily handled stock of 1.3 to 1.5% or higher

Low Power Cost — as little as ⅓ HP per ton

BIRD MACHINE COMPANY
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SCOTT INTEGRATION

WHAT SOUNDVIEW MERGER MEANS

For this industry at large, perhaps the most significant "lessons" to emerge from the now completed merger of Scott Paper Co. (1950 sales—$98,000,000) and Soundview Pulp Co. (1950 sales—$23,000,000) are these:

1. Reduction or elimination of duplication of many items of cost for labor, plant, materials, freight, etc., may be expected to result from substantial integration of operations from standing timber to finished products.

2. Acquisition of title to, and interest in, timberland appearing to be almost the only effective means of assuring a supply of raw materials adequate to support an extensive paper manufacturing and distribution operation.

Thus, here, the largest producer of toilet tissue, paper towels and household waxed papers and one of the largest facial tissue, has acquired the largest single plant producing sulfite pulp in the world, with one of the best backings of timber in the industry. For the first time in its 72-year history Scott will be substantially integrated. Soundview's ownerships and cutting rights in Washington and British Columbia are expected to yield 3½ billion bd. ft. (equivalent to 7 million cords). And, with subsidiaries, it owns 100,000 logged-off acres to be developed for future growth.

Many times have these two "lessons" been told in the mergers, timber deals and other big transactions in the pulp, paper and timber fields (in the last decade, especially), in every region of North America. But seldom before were told so dramatically—because of the size and importance of the principals.

There are these other significant results of this merger, completed as of Nov. 9, with approval of stockholders of both companies:

1. If NPA approval is forthcoming in reasonable time, a new Scott paper mill will be in operation on Gardner Bay at Everett, Wash., during 1953. The first of two large Yankee Fourdrinier tissue machines would then be rolling. And within another year, a No. 2 Yankee Fourdrinier in the new Soundview division of Scott. The last big machine Scott started, in Oct. 1950, was its tenth, at Chester, Pa.—187 inches.

2. Scott immediately begins to absorb in its existing paper mills up to 20% of Soundview's production of 600 or more tons—all bleached sulfite. The paper machines ot Everett, as each starts up, will each absorb from 10% to 15% of Soundview's output. This will be piped to the new mill in slush form—a distance of several hundred feet northward on the bay. This will eiiminate cost of drying, baling and shipping pulp and distribution for Scott products now shipped to western markets will be reduced in cost.

3. Scott's demand for other pulp will be reduced next year not only by utilization of Soundview pulp, but also by material increases in production control by the company. Scott will gradually absorb more of the Soundview pulp. Up to now it has bought in the market 53% of its requirements of about 350,000 tons. It bought from tightening markets in Sweden, Canada and U. S. In Soundview, it has the wood backing to assure 200,000 tons annually for the forseeable future.

4. Government military requirements for nitrating pulp to fire its guns might upset in varying degree the above two points. The military themselves can only guess the answer to this. Right now Soundview is making some nitrating—in World War II it reached the point where 100% of its output was nitrating. But now more mills are expected to have the "knowhow" for nitrating; and tissue is also an essential military and civilian product.

THOMAS B. McCABE (left), President for many years of Scott Paper Co., also its principal stockholder, who called the merger the largest transaction ever consummated by Scott.

U. M. DICKEY (right), of Seattle, President of Soundview, who became Vice President of Scott Paper Co., and its Senior Director on the Pacific Coast.

5. Soundview's management and technical staffs—described as "outstanding in competence and skill" by their new Scott associates (in fact, this was given as a reason for the merger) will be retained in management and operations. Two Soundview officials join the Scott board of directors; one as a vice president of Scott; three others become assistant vice presidents for the Soundview Division. They join a Scott management and staff which itself is reputedly one of the strongest in industry, through Scott's policy of building a staff system in every phase of activity—operations, sales, accounting, purchasing, traffic, engineering, technical control, chemical research, mechanical development.

6. Scott's already important role in growing markets of the Far West, where the greatest population increases in all world history have occurred in recent decades, will be stepped up. The Everett mill also will be a springboard for foreign exports. Scott already has sales offices in Seattle, Portland, Ore., San Francisco and Los Angeles. In trade circles it has been called "the depression-proof company," because of low cost production and far-sighted policies started by its long-time president, Thomas B. McCabe, in sales budgeting, rating every little customer as to calls, etc.

New Officers and Executives

Newly elected as vice presidents of Scott Paper Co. are:

U. M. Dickey, of Seattle, former Soundview president who will be in charge of the Soundview Division, and senior representative on the Scott board of directors for the West Coast;

Harrison F. Dunning, Chester, Pa., who continues as general operating manager;

William M. Carney, Chester, who continues as controller.

W. R. Scott III, who also continues as treasurer, but is succeeded as secretary by Andrew J. Schroder II, who also continues as personnel director.

Thus, Scott now has seven v.p.'s serving under President McCabe and Executive Vice Pres. Raymond G. Mateer. The others are J. Larcom Ober, G. Willing Pepper and Francis W. Plowman.

Moving to Seattle indefinitely is "Wing" Pepper, who has a new responsibility of correlating the expanded West Coast operations. Mr. Pepper, native of Philadelphia and '32 graduate of Pennsylvania, has been with Scott since Jan. 1940 when he became a director. He has been vice president for pulp procurement for several years, this duty taking him frequently to the Pacific Coast.

Another Scott executive who has moved West into a key position is 37-year old Paul C. Baldwin, who at the age of 31 became one of the youngest mill managers in the industry—at one of its biggest mills, Scott's at Chester, Pa. Recently assistant general operating manager under Mr. Dunning, he was elected assistant vice president and also president of Coos Bay Pulp Corp., Scott subsidiary operating sulfite mills at Empire, Ore., and Anacortes, Wash.

Mr. Baldwin will make a permanent home in either north Seattle or Everett—presently he is living in Seattle and has an office at the Soundview mill. He has the important assignment of directing engineering, equipment selection and construction of the new paper mill-to-be in Everett and also heading up Coos Bay Pulp Corp. and coordinating it with Soundview. A chemical engineer from Syracuse University, he earned a ph. d. at the Institute of Paper Chemistry.

Two Soundview directors and officers become members of the board of directors of Scott Paper Co. They are Mr. Dickey and Walter A. Starr. The latter was chair-

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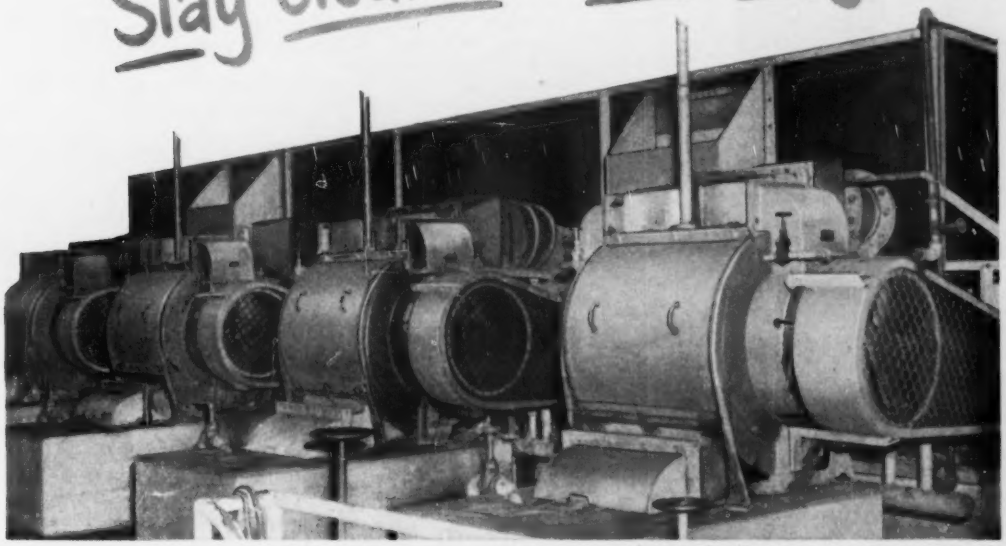

Chemstone headbox for rotary screens in use at the Halifax Paper Company Mill, Roanoke Rapids, N. C.

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You'll look a long way before you find a material for headboxes, consistency regulator boxes or flow boxes that stands up better than Chemstone* under the tough operating conditions of a hard-driven paper mill.

There are three basic reasons why Chemstone boxes stay cleaner and last longer:

Chemstone resists slime and bacteria. When flushing is necessary (as in the handling of some groundwoods) Chemstone boxes are easily cleaned by the simple process of hosing down.

Chemstone won't shrink or swell. Made of asbestos and cement, and integrally waterproofed, Chemstone has unusual dimensional stability. It is lightweight—yet exceptionally strong and durable . . . builds neat-looking boxes that last indefinitely.

Chemstone resists chemical action. Like all Johns-Manville asbestos-cement products, Chemstone is free from metallic oxides . . . resists both mild alkalis and acids. Chemstone boxes are unaffected by most mill waters.

Why not give Chemstone a chance to provide better boxes for *your* mill? It comes in sheets 48" x 96", in thicknesses from ¼" to 1¼" . . . and is easy to work with ordinary metal-working tools. For further information, write for data sheet DS series 405. Address Johns-Manville, Box 290, New York 16, N. Y. In Canada, 199 Bay Street, Toronto, Ontario. *Reg. U. S. Pat. Off.

Johns-Manville CHEMSTONE

MAKES BETTER BOXES

G. WILLING ("Wing") PEPPER (left), Scott Vice President, who has moved to Seattle for an indefinite period to correlate Scott's expanded West Coast operations. He had been frequently on the West Coast in recent years as V. P. for Procurement. Born in Philadelphia, graduated U. of Penn, 1932.

PAUL C. BALDWIN (right), elected Asst. Vice Pres. of Scott, and Pres. of Coos Bay Pulp Corp., who has moved permanently to the West, presently lives in Seattle. Was Asst. Gen. Operating Mgr. of Scott mills. Will direct engineering and construction of new paper mill at Everett, also operations there and at pulp mills at Coos Bay, Ore., and Anacortes, Wash.

man of the board of Soundview, and lives in San Francisco.

Three other Soundview men elected assistant vice presidents of Scott are: Leo S. Burdon, Henry Dennis and R. M. Buckley. Another new asst. v.p. is Harry C. Pardee, advertising director in Chester.

The initial 14-man board of directors of the merged companies included, besides the two Soundview officials: Messrs. McCabe, Mateer, Carney, Ober, Pepper, Plowman, Scott, Charles Van de Carr, Jr., president of Mead Corp. (joint owners with Scott of Brunswick Pulp & Paper Co.); Roswell H. Rausch, an engineer; Thomas S. Gates, Jr., partner in Drexel & Co., Philadelphia; Gilbert Kinney, senior v. p. of J. Walter Thompson Co., New York, and Wm. Clarke Mason, senior of a Philadelphia law firm.

What Soundview Brings to Scott

Last summer Mr. McCabe went West to discuss the merger negotiations with Mr. Dickey. He said that Scott for years had been looking for a suitable paper mill site on the Pacific Coast and possibilities for expanding its pulp supply. Negotiations were handled in the West by Mr. Pepper.

Soundview Pulp mill has four 154 in. Fourdrinier pulp drying machines, 12 digesters; modern bleach plant, unique SO_2 recovery system, and big log and small wood hydraulic log barking and chipping plants. Another major asset is Soundview's $10,118,000 cash position.

For the time being the Coos Bay and the Soundview Divisions in the West will be separate entities, with Mr. Pepper and Mr. Baldwin as coordinating officials. There is no question about Scott continuing to operated the smaller mills at Coos Bay and Anacortes.

The new paper mill at Everett, it is expected, will add a payroll of about 400 persons in that city, which already has two big pulp plants and one pulp and paper industry. This will augment 1,500 present mill and woods employes of Soundview.

Stockholders of both companies may figure to benefit in the generation of sales that may hit the $150,000,000 mark. As Mr. Dickey explained to his stockholders, Soundview had little opportunity to expand except to go into paper; Mr. McCabe, on the other hand, explained to his that it would have taken years and large expenditures to build a new Scott pulp and paper mill from scratch and to train personnel.

Acquisition of Soundview gives the multiple Scott enterprises its opportunity to become at last a fully-integrated pulp, paper and converting enterprise. Thus Soundview's history ends as a separate entity, which began in 1932, when its then newly built pulp unit No. 1 and a small tract of timber were separated by bondholders' agreement from Puget Sound Pulp & Timber Co. Its growth since then has been one of the greatest in the industry. Spokesmen for Scott say Soundview's aggressive policy of acquiring timberlands and lands suitable for timber growth in the Far West will be continued.

Besides about 400 in the new paper mill, Soundview Division continues with 500 in the pulp mill and 1,000 in woods; thus the division employment eventually will be about 1,900. The merger brings Soundview, with its dependence on one unfinished product, pulp, with prosperity dependent on market fluctuations, competing with foreign imports, into a company with strong nationwide investment prestige.

Soundview's sales had reached a record of $23,022,140 in 1950, and reached nearly $15,000,000 in only half of this year. Income after taxes in 1950 of $5,298,226 was, however, less than each of the previous three years.

Scott Paper Co. was established in 1879, and has been incorporated in Pennsylvania since 1905. It has mills at Chester, Pa., converting plants at Hoboken, N. J., and Sandusky, O., and subsidiary pulp and paper mills at Oconto Falls and Marinette, Wis.; subsidiary paper mills at Fort Edward and So. Glens Falls, N. Y.; and subsidiary pulp operations only at Anacortes and Coos Bay in the West, Clermont, Que., and Brunswick, Ga., the latter shared 50%-50% with Mead. It also owns two paper machines at Milford, N. J., operated by Riegel Paper Corp.

Its trade marks are *ScotTissue, Waldorf, Soft-Weve, ScotTowels, Scotties* (facial), and *Cut-Rite* (waxed). All these are necessities—good times and bad. Over half of its net sales in 1950 were in toilet tissue. It reached a record sales volume in that year of $97,724,407 and already in nine months of this year had passed the $91,000,000 mark. Net income after taxes also set a record for Scott in 1950 of $7,195,171 and in nine months this year was nearly $5,000,000. In 1914 its sales totaled about $1,000,000 and will be well over 100 times that this year.

The Chester plant employs 1,400; operates ten high speed machines, making 227,000 tons. One new one started up in Oct. 1950, and in just the past four years, eight of the other machines were speeded up 16%.

Although as early as 1923, Scott invested in pulp production in Canada, it was not seriously working toward integration until it went in with Mead in 1936 at Brunswick, Ga., now built up to a 400-ton mill. In 1940 it purchased the two mills at Coos Bay and Anacortes, 170 tons total. Papermaking and finishing was confined to Chester until 1941 when Marinette and So. Glens Falls were acquired from I. P.; and Fort Edward in 1944. The latter has three new high speed paper machines; two rebuilt ones. Scott bought the Cut-Rite plants and assets of Automatic Paper Machinery in 1945. This year it bought Oconto Falls in Wisconsin. Now it makes 390,000 tons a year of finished products.

Description of Mill Site
Near Valdosta, Ga.

Samuel Kipnis, president, National Container Corp., turned the first spade of earth at "ground breaking" Oct. 26 for its 500-ton $32,000,000 mill at Clyattville, 19 miles south from business center of Valdosta, Ga. Participating were Valdosta officials. Tax writeoff of 60% ($23,000,000) is approved.

Vice President William T. Webster, of Jacksonville, is directing selection of equipment and construction

The mill site fronts about ¾-mile on the east side of hard-surfaced Georgia Route #145. It extends back a full mile to a gravel cross road, then about 7/10 mile further but on both sides of road. This is the route to "Grassy Pond State fishing reserve" and will be black-topped by the state. The site is served by excellent natural drainage. The pulp mill is to be placed in the rear, near the cross-gravel road. Effluent will be led to a large natural pond about 20 feet below the land surface and located in the rear, south of the fishing reserve. This pond drains into a series of ponds extending about 1½ miles to reach Withlacoochee Creek, a good flowing stream that empties into the Suwanee

INDUSTRY PROMOTIONS

ARTHUR J. GOETZ (left), elected Executive Vice President of River Raisin Paper Co., Monroe, Mich., according to announcement of President Chas. L. Wood, and JOSHUA J. WARD, Jr., (right), promoted to Construction Engineer of Union Bag & Paper Corp., Savannah, Ga., the No. 2 spot under Chief Engineer Robt. Inman for its big expansion program which includes a 6th Pusey|ones machine and a 300-ton semi-chem plant for corrugating medium. Born in Monroe, Mich., Mr. Goetz, attended Springfield College in Massachusetts, is in his 30th year with River Raisin. He held clerical and purchasing posts, was V.P. of Purchases since 1947. H. R. McGovern, who has been Gen. Supt. of Container plants, was made V.P. of all Manufacturing, and J. W. Walter, Secy-Treas., also was made V.P. of Finance. "Josh" Ward has been with U.S. since before World War II, and in his new position, succeeded Henry Pratt, who went with Ketchikan (Alaska) Pulp & Paper Co. as Project Engineer.

Shopping around for the best?

Try Cyanamid's Specialty Chemicals for special properties in paper...

Cyanamid makes an extensive line of *specialty* chemicals that can impart *special* properties to your paper or process ...make paper softer or stiffer, water repellent or absorbent —as your product requires. Whatever the property you seek, Cyanamid's versatile specialty products will help improve the quality of your paper...simplify your process...broaden your markets...increase your sales.

Here's a brief list of some of the more important ones...

To improve your products...

PAPER PRODUCTS 2157-E, 2158-E soften tissue and absorbent paper. Chief advantage: they can be added directly to the beater.

AZITE® 900 Liquefier reduces the viscosity of colloidal solutions of starch and protein, preserves the strength of acidic paper.

PAPER PRODUCT 2274, a 70% dark rosin size with non-foaming properties.

PAPER PRODUCT 2270, a specially fortified rosin size for improved sizing results.

AEROSIZE® Sizing Emulsions act as size boosters, are aqueous, free rosin emulsions that are excellent for waterproofing paper.

PAPER PRODUCT 2018, a special sizing agent, waterproofs rock wool against hot and cold water.

PAPER PRODUCT 2142, a sizing agent, increases the water-repellency of asbestos shingles.

To improve your process...

PITCH DISPERSANT 1677 prevents the formation of pitch agglomerates which plug the screens and stick paper to the rolls.

THE BARDAC PROCESS enables the addition of large amounts of resinous dispersions to paper and paper board products without white water losses or equipment fouling.

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THE NEW BIRON MILL

AN EFFICIENTLY ENGINEERED PLANT

One of the very first and finest of the modernized mills completed in the post-war years by the industry is Consolidated Water Power & Paper Company's Biron mill and its new #4 machine. Although this new machine has been rolling off an average of 125 tons of enamel paper a day since 1947 the story of the efficiently engineered plant layout at that location still has not been told.

In the 57 years of mill operations at Biron, Wisconsin, the plant has grown from a small newsprint mill with two machines to a modern industry operating three enamel and one paperboard machines. The recently remodeled Consolidated mill of today has little in common with the old newsprint business that was founded in 1894 by the Grand Rapids Pulp and Paper Company.

Operated since 1911 by Consolidated the Biron Division contributes significantly toward making Consolidated one of the world's leading manufacturers of enamel papers used by many of our national magazines. Consolidated with its three book mills at Wisconsin Rapids, Biron, and Whiting, Wisconsin produces about 650 tons of enamel paper a day, a product meeting the tremendous demands of modern high-speed printing.

The Biron mill has been given new impressiveness with the remodeling of two years ago. This model structure of brick and steel construction has a new powerhouse, up-to-date machine room, and an efficient railroad car loading setup. The powerhouse operates three Babcock & Wilcox 450# pressure boilers and a GE 7,500 KW turbine. Bright buff tile covers the machine room walls. Large glass brick windows are scientifically spaced to admit the maximum amount of natural sunlight. Enclosed loading platforms to spur tracks provide space for 16 railroad cars at any one time.

OUR COVER PICTURE

Here is a smaller replica of our cover picture this month, showing the old and new structures of the Biron, Wis., Division of Consolidated Water Power & Paper Co. The Wisconsin River and a managed forest are in background. New mill and power buildings are in foreground; directly in front center, near new offices, is 100 yr. old Francis Biron home.

HISTORIC HOUSE IN BIRON

Preserved by Meads, this old home is historic landmark on Wisconsin River. Was built over 100 years ago by Francis Biron, pioneer lumberman. Was maintained as old office building for Biron Division of Consolidated Water Power & Paper Co. Records were kept, business transacted, amid lavish interior decorations imported from France. It is built of heavy wood frame, with gables and dormers of a past era. In our cover picture, the house can be seen in park area directly in front of mill.

Other interesting engineering highlights at the plant at Biron are:

1. The impressive U-shaped entrance to the plant which leads conveniently to the mill, mill offices, and second floor. Soundproofing and arrangement lend to working efficiency and quick access by supervisors and executives to mill operations. Johns-Manville tile floors throughout the entrance to offices add to its neat appearance and easy maintenance.

2. The placement of the auxiliary service departments on the machine floor level allows for ready availability of the pipe, paint, tin and electrical shops, machine coating storage, laboratories, and the washroom and locker room. This layout with all departments strategically placed adjacent to operations still provides for outside rooms which are well lighted and pleasant.

3. The straight-line flow of manufacturing operations from the rebuilt grinder room directly through to the railroad car loadings. (In 1926 a pipeline was laid between the Wisconsin Rapids sulfite mill and the Biron mill through which slushed sulfite stock is pumped five miles for use in the manufacturing process. Other sulfite is transported by truck as wet laps from the Consolidated sulfite mill in Appleton, Wis.)

4. A Link-Belt coal displacer "slicer" is used for unloading coal; it moves across the coal car with its heavy wedge, emptying the car even when coal is frozen solid. This is one of the first of these "slicers" used in the country having been chosen by Consolidated for safety reasons, making it unnecesesary for men to enter the cars to break up frozen coal.

5. Waste bark and wood refuse is pumped from the woodroom to the boilerhouse where it is screened and much of the H_2O removed with the Nekoosa bark press. From the press the wood is ready for burning in one of the boilers designed by Consolidated engineers to facilitate disposal and economy measures.

6. The grinder room was rebuilt with 14 grinders, formerly used for 24 in. wood, which now is remodeled to grind 33 in. wood. In addition there are two Appleton Machine Roberts grinders, each driven by 2000 HP motors. In the 33 in. wood cut there is one less saw cut, less hammering of wood and broomed ends. Consolidated has achieved here a saving in wood supply conforming with its conservation program. This conservation of pulpwood is also evident in its production of coated papers; the coating for the paper is about one-third of its content, the wood pulp fibres being only two thirds.

7. A du Pont Solozone bleach plant is used for up-grading the groundswood for the quality papers made by Consoldiated at Biron. Beaters in the mill are only used

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OF CLEAN, UNIFORM-SIZE CHIPS?

Specify
LOW-HEAD
Chip Screens
1. Horizontal design saves headroom and space —cuts dollar cost of installation or remodeling.
2. Screen surface tension conveniently applied by means of bolts outside screen body.
3. Mechanism is mounted above screen for easy inspection — secured in place by 8 bolts.
4. Vibrating mechanism enclosed in dust and moisture-proof housing . . . continuously splash-lubricated.
5. The 45° straight line motion stratifies bed of chips—accepted chips pass through top deck . . . oversize chips pass to rechipper.
6. All welded parts are stress-relieved. Chip screen is constructed of high-tensile strength steel alloy.
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ELIMINATE OUTAGE TIME FOR SLIVER REMOVAL

YOU GET MAXIMUM chip screen performance with the *Low-Head* screen. Unlike conventional, inclined screens, it is designed to provide *highest* percentage of uniform size chips!

And the reason is its unique vibratory motion — chips move in a single direction, on their sides. Long slivers do not turn on edge and lodge in screen openings. Full capacity is maintained at all times.

Low-Head screens operate horizontally — save headroom and space over inclined design screens. High tensile steel alloy construction makes unit lighter, yet stronger — saves power, lengthens life.

A-C ALSO OFFERS RIPL-FLO SCREEN

For chip screening applications where accurate sizing is not important, Allis-Chalmers offers the *Ripl-Flo* vibrating screen. This two-bearing, inclined type screen is low in initial cost . . . can be operated with minimum expense.

Contact your nearby Allis-Chalmers office for help in selecting the *correct* chip screen for your operation, or write for Bulletin 07B6353A.

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for the three older machines of 147 in., 105 in., and 81 in. trim. The Morden stock maker and the Appleton jordan, custom-built mixing vats of 2000# capacity, and the battery of three Bird screens prepare the stock for the new 138 in. trim Rice Barton Fourdrinier.

Machine Description

This machine is unexcelled in enamel paper production. The enclosed gears for the General Electric drives, roominess in back of the machine, and easy accessibility of all its parts are important factors in safety and working conditions. There is very little noise — all gears operate in baths of oil.

The machine will run up to 1200 F.P.M. It is elevated three feet from the floor and operates with a headbox designed by the paper company. Two breast rolls instead of one large roll make possible a good rigid slice. A 36 in. suction couch (Beloit), 12 in. suction box, open end 28 in. dandy roll, dual press, smoothing press, 44 dryers, (60 in. in diameter and 150 in. in face) and SKF anti-friction rocker type bearings with water and dust-proof housing are features that stamp it as among the modern machines of the industry.

All of these engineering accomplishments of the Biron mill lend to efficient and smooth flow of manufacturing, bringing to the buyer a quality product in a high-speed operation.

The many forward advances made by Consolidated at its Biron Division came about under the able leadership of George W. Mead and his two sons, Stanton W. Mead and Walter L. Mead. Stanton Mead has now succeeded his father as president of the company and Walter Mead is continuing his position as vice president and director of sales.

Working closely with the Meads, making significant contributions to the modern undertaking, were William R. Thiele, Consolidated's veteran engineer, and Warren E. Beadle, mill manager at the Biron Division. Today Mr. Thiele continues in charge of the company's power developments while Mr. Beadle carries on as Biron mill manager for his 16th year.

Kimberly Mill Breaks Longview Safety Record

The Kimberly, Wis., sulfite pulp, groundwood and book paper mill of Kimberly-Clark Corp., now boasts the best national record of safe man-hours in a Class A (large) paper mill. Longview Fibre Co., a kraft mill of Longview, Wash. held the Class A record until Nov. 15 at 9 a.m.

The Wisconsin mill went into November with over 270 consecutive days without a lost time accident. It was challenging Longview Fibre's national record of 2,612,656 hours without a lost time accident. Kimberly had long since passed the two million hour mark—back on Sept. 10.

J. T. Doerfler, mill manager at Kimberly for the past 22 years, is nearing retirement, compulsory in his company.

"No present would make me happier on retirement than the record," he said, earlier: "Already it is the best record of any Kimberly-Clark mill ever made."

NEW BIRON, AN ACHIEVEMENT

To these four particularly—but to many others in Consolidated too—the remodeled Biron Mill is a great satisfaction (l to r): GEORGE W. MEAD, under whose leadership it was accomplished before his retirement; STANTON W. MEAD, who succeeded his father as President year ago (was V. P. of Mfg. when Biron expansion was carried out); WILLIAM F. THIELE, veteran engineer who was directly in charge, now is in charge of company's power developments; and WARREN E. BEADLE, now in his 16th year as Biron Mill Manager

EXPANSION OUTLOOK

Authorized expansion in the pulp and paper industry on the basis of issued certificates of necessity faces considerable slowdown in actual construction during the early months of 1952, while new applications may well be tied up for a long period of time in the jam of consideration.

This is the considered opinion of Washington observers following the announcement by DPAdministrator Manly Fleischmann of first quarter 1952 allotments of steel, copper and aluminum.

Men who should know tell PULP & PAPER that the defense program is now at such a stage of advancement that there will be little flow of materials under CMP-4C for new facilities in the pulp and paper industry for at least 6 months of the new year. It is hoped that by that time, however, the construction of defense facilities will have progressed to the extent that structural steel and other metals may be released for the authorized new facilities in this industry now building, or waiting to begin construction.

Although new construction and expansion programs will be limited in the first part of the year, PULP & PAPER was told that there is no reason to believe that there will not be enough materials available to carry on present operations at present operating levels through use of MROs. These spokesmen point to the fact that under more difficult conditions during World War II the industry was kept on a sound operating basis, and they expect that situation will maintain during the next several months of shortages.

While there are several applications for certificates of necessity held up for consideration by DPA from the industry, their granting will have no immediate significance since steel for construction purposes would not be available for several months in any case.

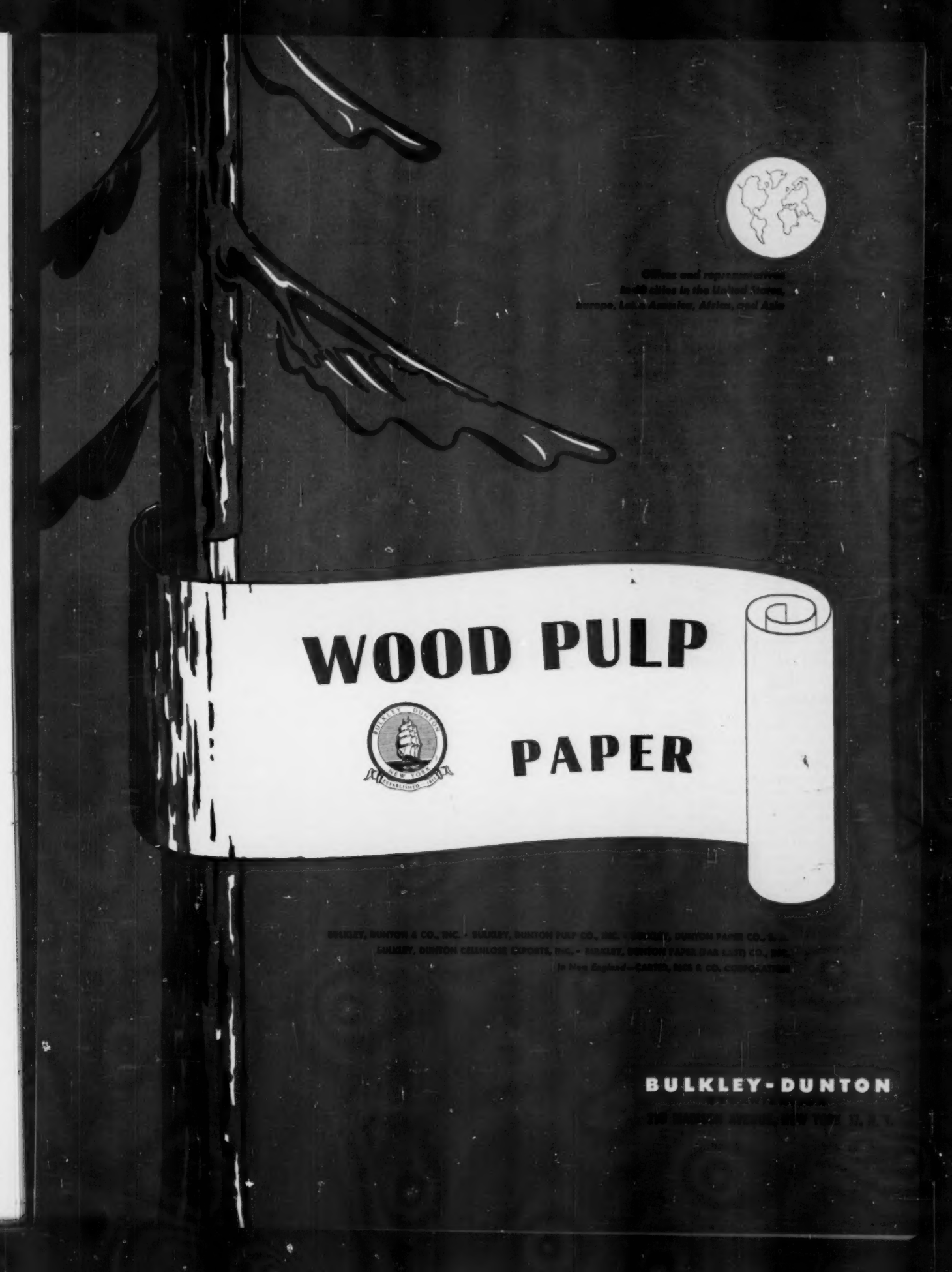
It is interesting that in the original release of first quarter 1952 allotments of controlled materials, DPA showed 1170 tons of steel, 22 tons of copper and copper base alloys, and 25 tons of aluminum being allocated to the pulp and paper industry. This was the lowest allocation made to any of the national industry divisions with the exception of textile—which was listed as having "No Requirements."

A short time later in a Washington meeting, the pulp and paper machinery manufacturers were told that their allotments of controlled materials for this first quarter period would be 75% of their 1951 fourth quarter allotment—while these manufacturers countered with the statement that their fourth quarter allotments permitted them to operate at about 50% of capacity, and that demand ran to about 150% of their current production.

All this seems definitely to point to a tightening of belts during the coming months, with the industry having to be satisfied with maintaining production at current levels, and putting off for a period the building of new facilities.

In respect to certification of new industrial facilities for tax amortization, industry was told by DPA that companies that begin construction before Jan. 1 can apply for amortization without having obtained prior approval. It had previously announced a system of pre-certification would be established. The import of this for the pulp and paper industry is slight because materials are being allocated only for essential expansion programs, and as of this writing this industry has never had such recognition.

Companies given clearance for tax amortization purposes in October who had construction projects already under way included: Groveton Papers Co., Groveton, N.H.—sulfite pulp; Taylor Fibre Co., Betzwood, Pa.—fibre; International Paper Co., Pascagoula, Miss.—paper stock; River Raisin Paper Co., Monroe, Mich.—paperboard cases; Fort Howard Paper Co., Green Bay, Wis.—pulp; and Central Fibre Products Co., Inc., Hutchinson, Kansas—pulp and paper.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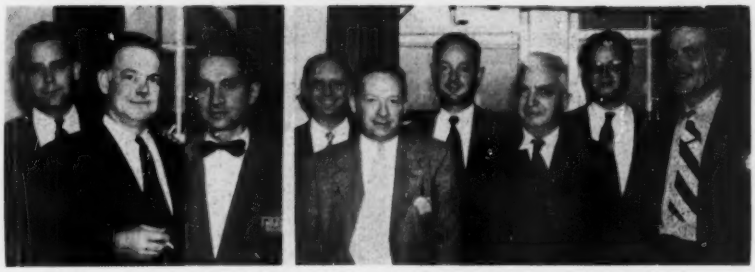
COVEY OF ENGINEERS

GEORGE LAW, Reliance Electric's man in Appleton, Wis.; FRANK A. DENISON, for Reliance in Houston, Tex.; RAY BENDER, Sales rep. for Appleton Machine, from Appleton; C. E. GREEN, for Link-Belt Co. in Atlanta; W. R. McNALLY, Link-Belt, Chicago; H. F. McLEROY, Woodyard and Woodroom Project Engineer, Union Bag, Savannah; JOHN ROBINSON, Hepenstall Co., Savannah; F. C. CAME, Engineer for Union Bag, and D. D. HALL, E. B. Eddy Co., Hull, Que.



SAVANNAH (Cont. from P. 38) REVIEW OF PAPERS begins P. 50

class of '32 man at Minnesota, but he stayed on to acquire various degrees there, including a master's in E.E. In 1935 he joined General Electric, first on tests and turbine engineering in Lynn, Mass., then to the switchgear division in Philly, and since 1942 has been in the industrial power division of industrial engineering in Schenectady, N.Y. He gave a paper on power distribution at the first Engineers' Conference in Milwaukee, then was co-author of one on steam turbines at Boston, and is co-author of a book on "Capacitors for Industry." . . .

Chicago in '52—Where to in '53?

It is all settled that the annual Fall Engineering Conference — drawing the "cream of the crop" of the creative and executive men in physical plant of this industry—will hold its 7th meeting in Chicago. The dates are Oct. 12-16, 1952, at the Morrison Hotel, Chicago. But where will it go in 1953? The committee and the leadership are debating this question.

It will be either to the Pacific Northwest or to the Northeast corner of the U.S., either one extreme region or the other. We heard prominent and influential leaders say it should be on the West Coast, where many new engineering advances have taken place and where the development of the industry is comparable with that in the South. Others—and high placed mill men, too—said "our companies will not approve sending their men that far." Disputing this, others pointed to the record that progressive companies send their men to any corner of the globe—even to Sweden or remote mills in Canada to see something new. . . .

RANDOM "SHOTS"—IN MILL—ON SUN DECK

WALTER PARSON, Paper Mill Supt., Southern Paperboard Corp., on tour of that mill at Port Wentworth, Ga., with CHARLES VICKERY, Vice Pres. of E. D. Jones & Sons Co., Pittsfield, Mass., who was interested, naturally, in the good record made by 14 Jones Majestic jordans ahead the high speed kraft board machine.

MIDDLE—E. A. DILLEN, (left), of Garlock Packing Co., Jacksonville, Fla., and WILLIAM V. KNOLL, Vice Pres. and Gen. Mgr. of Midwest-Fulton Machine Co., Dayton, O., which has announced a new continuous beater
AT RIGHT—JAMES BOYD (left), President, and W. G. PRINTZ, Chief Engineer, The Manchester Machine Co., of Middletown, O.

Forecast for Europe

Constant G. G. Ninck-Blok, research director of Holland's biggest pulp and paper industry, Van Gelder Zonen, which is at Velsen, near Amsterdam, was called upon for a few words. He said that a "United States of Europe"—a dream of restored Prime Minister Churchill and many others—would permit the building of much larger and more modern mills in Europe. What he presumably meant was that present numerous trade and other frontier barriers tend to keep mills small; also require that they make many products instead of being mass producers of a few grades as are the big mills he saw in the South.

He told PULP & PAPER that his company, the only one in Holland making chemical or mechanical woodpulp (see our WORLD REVIEW Number '51), will make 200,000 tons of many grades of paper this year. Van Gelder Zonen has five paper machines, a sulfite and two groundwood mills. . . .

Big Electrical Delegations

In response to the appeals made to them to support the conferences, the electrical companies really turned out in strength. Donald Putnam, who is manager of sales for the pulp and paper industry and lumber in the commercial engineering division of General Electric Co., in Schenectady, explained it brought men from various faraway pulp and paper mill centers. These men were then able to go back to the smaller mills, which could not send their own delegates, and report to them the new engineering developments.

G. W. Knapp, manager of the paper and textile division of application engineering, was another key GE man there. W. M. McGraw from Appleton; Dave Gearhart from Grand Rapids; J. M. Popp of Cincinnati, W. L. Hilfrank, of Boston, R. E. Griggs, who handles the paper accounts out of New York City area, were the type of experts Mr. Putnam had in mind, in suggesting they would carry back information to "their" mills. R. H. Jackson, of Atlanta, industrial manager for the Southeast, was another key GE delegate of about 30 . . .

A similar delegation of over 20 Westinghouse men brought F. D. "Mud" Weatherholt, manager of the industrial department, East Pittsburgh, a top flight executive, who hasn't had many opportunities to mingle with the paper industry people. Of course, Mort Cooper, manager of the general industry section; V. B. Baker, manager of paper mill engineering, both from East Pittsburgh, were on hand also A. W. Rose, Westinghouse's industrial mgr., Atlanta . . .

Reliance Electric & Engineering had key men from different areas — J. L. Van Nort, Paper Mill Division, at Cleveland headquarters; and others like F. A. Denison from Houston, Texas, and G. E. Law from Appleton . . .

A word should be entered for the two big mills in Savannah that did so much to make the conference a success. Mr. Nicholson; the Resident Manager, Tad Dunn; Gen. Supt. Jimmy Lientz, Chief Engineer Bob Inman the newly promoted Construction Engineer Josh Ward, Kirk Sutlive, "Charb" Charbonnier and others of U B; C. S. "Bill" Heustis, head of Gair's container plants; Charles McCarthy, manager at Southern Paperboard, H. W. Borman, plant engineer, Bruce Ellen, Milt Ellis and others of that mill.

But none of them could have derived more satisfaction from bringing the first Engineers' conference South than Mr. Nicholson. When he was manager at Savannah and TAPPI president, he was instrumental in bringing the first technical meeting to that city . . .

His many friends were pleased to see Ken Geohegan, vice president of Howard Paper Mills and TAPPI president, who recently underwent a serious operation, but has recovered nicely. He arrived for the last day. Of the other 14 members of TAPPI's executive committee, those present for the Engineers events included, besides Vice President Pringle and Secretary R. G. Macdonald, four others—R. P. "Tom" Price, Hammermill v.p.; K. O. Elderkin, Crossett Paper Mills manager; Jimmy Lientz, Union Bag general superintendent, and Milton Jacobs, Charles T. Main engineer. . . .

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DIGESTER CORROSION

WHAT SAVANNAH DELEGATES LEARNED

By F. W. Flynn

Member of TAPPI Digester Corrosion Subcommittee and Tech. Asst. to Kraft Mill Supt., Crown Zellerbach Corp., Camas, Wash.

The program of the Chemical Engineering Division of TAPPI at the Savannah meeting featured the report of the Digester Corrosion Subcommittee.

The discussion section, at which the report was made, was well attended by mill representatives from all sections of the U.S. and Canada. The steel producers and steel fabricators, supplying the pulp and paper industry, were also well represented.

The secretary of Digester Corrosion Subcommittee reported at the round table discussion that 50 questionnaires had been sent out to U.S. kraft mills and 36 had been returned. Of the 20 questionnaires to Soda Mills, eight were returned. This coverage, although not complete, indicates the interest and cooperation by industry.

A point of concern by the committee, was the number of returns on which no digester corrosion rates were known, or at least the rates were not reported. It was apparent that a number of mills lack specific corrosion data. Past practice on the part of some insurance underwriters has evidently only resulted in visual inspection. One of the functions of the Digester Corrosion Committee has been to point out the need for specific corrosion data and provide means for obtaining the data and standardization in reporting and tabulating the data.

One of the chief obstacles to more complete and accurate digester corrosion data has been a rapid and accurate measuring tool. Although, as reported previously, the Audiguage will give accurate thickness measurements, it has in all reported instances been used only from the inside of the digester. This limitation of its use has resulted in some hesitation on the part of operators to remove a digester from production for shell thickness measurements.

JAMES R. LIENTZ (left), Gen. Supt. of Pulp & Paper Division of Union Bag & Paper Corp., and Chairman of Chemical Engineering Division of TAPPI, who headed corrosion session at Savannah, and FRAN W. FLYNN (right), Tech. Asst. to Kraft Mill Supt., Crown Zellerbach Corp., Camas, Wash., who participated as a Corrosion Committee member. Mr. Flynn wrote this summary of new developments in the Kraft industry's anti-corrosion campaign. They were photographed together outside the Hotel Gen. Oglethorpe in Savannah. Mr. Lientz also was Chairman of Arrangements at Savannah.

A New Instrument

At the meeting, representatives of the Pulp and Paper Research Institute of Canada reported the development of a new instrument for measuring wall thicknesses. The instrument, which employs *Cobalt 60 isotype*, can be used from either the inside or outside of the digester. The instrument, although still only a laboratory model, will, when available to industry, tremendously simplify the measurements of digester wall thicknesses. The only qualification placed on the instrument is that the digester wall be not too thick or too thin; the greatest accuracy of the instrument being in the range of 1¼ in. to 1½ in. The effect of chips in the digester is not known yet but this could not be a serious problem, as measurements could be made while the digester was being filled. Another great advantage of the Cobalt 60 instrument is that the lagging, or insulation on the outside of the digester, does not have to be removed to obtain accurate results. This is one of the reasons the Audiguage is not used extensively for measuring wall thicknesses. Temperature changes in the metal do not affect the accuracy of the new instrument. The Canadian group expressed the hope the new instrument, ready for field use, would be on display at the Feb. 1952, New York, TAPPI meeting.

Inconel Shows Promise

Of the alloy linings reported, it would appear that Inconel lined vessels, to date, show the most promise in the field of alkaline pulping. Several mills report repairing cracks in shop-lined digesters with varying degrees of success.

The success of field-lining existing digesters appears to be still questionable. Some mills have reported partial success with this method of prolonging present digester life. However, knowledge of field-lining procedure has been greatly expanded during the past several years and the background of success and failure is building for future practice.

Several companies have carbon brick lined new digesters upon installation and one company reported an inspection of carbon brick lining that in general, after one year, was in excellent condition. However, some slight spalling was evident in several courses near the top of the cone section.

The effect of stray electric currents, particularly as the result of arc welding operations, has been under study by one mill. Tests made in this mill indicate a fluctuating current exists in the digester shell and that the current is almost proportional to the temperature rise during the cooking cycle. More information on

UP-TO-DATE REPORT ON KRAFT INDUSTRY'S "HEADACHE"

Once again PULP & PAPER is pleased to present to its readers an up-to-date and authoritative report on progress being made by the kraft industry toward solving its critical corrosion problem. And again the author is F. W. (Fran) Flynn, member of the TAPPI committee which is gathering data on the subject. Our readers will recall his interesting report in our Jan. 1951 issue.

At that time we quoted a leader of the industry as saying the Southern kraft industry is "up in arms" over the problem and that it *demands* a solution at the earliest possible date.

The subject, naturally, was of prime importance at the Savannah Engineering Conference. A report on developments there is made by Mr. Flynn. Union Bag & Paper Corp., one of the host mills at Savannah, is one of several mills which have spent millions of dollars in plant scale experiments to try to solve the problem. Its general superintendent, James R. Lientz, shown in a photo here with Mr. Flynn, chairmanned the session at Savannah, which discussed digester corrosion. He serves with Mr. Flynn on the industry's corrosion committee.

Mr. Flynn was born in Minnesota, graduated from the U. of Minnesota in chemical engineering. He joined the technical department of Crown Zellerbach Corp., Camas, Wash., prior to World War II, then left for war service in the U. S. Navy. Since his return to Camas he has advanced to the position of technical assistant to the kraft mill superintendent.

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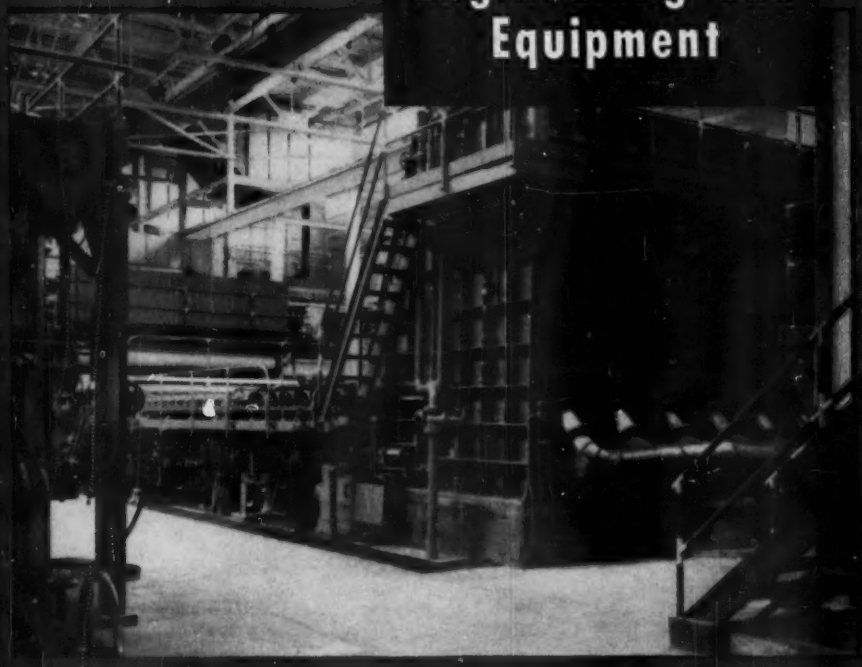

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this study should be forthcoming within the next year.

Corrosion Rates Reported

With respect to corrosion rates in existing digesters, 73% of those reporting show corrosion rates of less than 50 mills per year. The major portion of the reported digesters were made of A-70 or A-285 steel. It was brought to the attention of the committee that too much stress should not be placed on the specification number, as steels bearing the same specification number may vary widely in silicon content. The silicon content is not specified in A-70 or A-285 grade steel and therefore will vary according to whether the steel is fully killed, semi-killed, or the so-called rimmed steel. Also, the silicon content of the steels in the various categories vary from one steel produced to another. It was suggested on all future digester purchases, a full analysis of the steel be requested.

With the cooperation of the Pulp and Paper Research Institute of Canada, the TAPPI questionnaire was sent to a number of Canadian kraft mills and then returned to the TAPPI group for analysis. Corrosion rates reported on 60 digesters ranged from 13 mils per year to 70 mils per year, which is about the range for U. S. mills.

From the information so far tabulated by the committee, the consensus of the group is that the answer to the corrosion problem of the kraft pulping industry is still not in sight. However, with the information on hand, and with the cooperation of the industry, the questionnaire, or at least parts of it, will continue to be circulated so that over a period of the next few years, concrete recommendations can be made as to the type construction most satisfactory for kraft digesters.

To illustrate the necessity for regular and systematic digester corrosion inspection with a high level of accuracy, particularly as to digester wall thickness the story, with illustrations of a recent explosion in an Eastern soda mill, was told.

The mill was old, built in 1870. Eight small digesters (850 cubic feet capacity) and with 13 to 55 years of service were in use. The particular digester which caused the catastrophe had developed a leak previous to its explosion but after being out of service for several months was repaired to the satisfaction of the insurance underwriters for cooking at 90 pounds pressure. The vessel was used from January until May, cooking at 75 to 80 pounds pressure. At the time of the explosion the digester was coming up to pressure when the top blew off, completely demolishing the digester house and severely damaging the rest of the mill. Two lives were lost and several men injured and the only reason more people did not lose their lives was that the accident happened at night. The plant damage ran into hundreds of thousands of dollars. It was reported the digester that exploded had thinned down from an original ¾ inch to ¼ inch or less over an area extending more than one-half the circumference, and from midway in the height of the shell all the way to the upper head.

Availability of Steels

The meeting was concluded by statements of representatives of the various alloy and mild steel producers and fabricators as to the availability of their products. All pointed out the necessity of complete information on the use of the material ordered so that unnecessary delay might not incur due to the lack of this information.

Practically all nickel-bearing stainless steels are hard to procure, but with fortitude on the part of the user, can be obtained with the proper papers. Industry was warned not to develop the attitude the material is unavailable and thereby not make requests, as this invites further restrictions.

The second quarter of 1952 will see more type 410 and 430 alloy available due to the development of new sources of ferro chrome. Mostly alloy producers are seeking information on the performance of the alloys containing only chrome with the hope such alloys can be used to replace to some extent the nickel chromes.

MILL SCALE EXPERIMENT

At Union Bag's Savannah Mill

The eyes of the kraft industry are, figuratively speaking, on a lineup of some 17 digesters at the Union Bag & Paper Corp., in Savannah, Ga., where a vast plant scale "experiment" is being undertaken in an effort to determine the best materials and methods of digester fabrication to combat that bugaboo—corrosion.

Gunnar Nicholson, vice president for manufacturing, modestly disclaimed that U B is doing any more than companies like Crown Zellerbach, Crossett, and some others, to solve the problem. But despite what he says, nowhere else in industry is there such an *extensive* experiment going on. Union Bag, as always, is going to share what it learns with the whole industry.

U B has deliberately invested in a variety of plant scale linings and fabrication in order to do so. Of course, it certainly is many times more costly than laboratory or pilot plant experiments would be.

Five of the U B digesters are Inconel clad. Others are Lukens Stainless clad No. 316 Colombian or brick-lined or mild oversize thickness steel. One new type carbon brick-lined has been in about one year; the oldest clad linings have been in for about 16 months. All the clad linings are 100% clad—that is, from top to bottom of digester interior.

Obviously, it is too soon to know very much. Perhaps another six months or year will tell a revealing story. Union Bag's big expansion program now under way will add eight new digesters for kraft and six—these latter all carbon bricked—for the new semi-chemical plant. This will make a grand total of 34 digesters at Union Bag, *all in one line.*

Canada Will Make
5,500,000 Tons of News

Canada's newsprint production this year will be at least 5.5 million tons, according to R. M. Fowler, president of the Newsprint Association of Canada, who recently attended the meeting of the executive board of the Canadian Pulp and Paper Association, of which he is also president, in Vancouver, B.C. Eighty-seven percent will be shipped to the U.S.

FROM MIAMI VALLEY

Black-Clawson Division were well represented. Included were (l to r) PETE J. JERARDI, Chief Engineer of B-C division at Hamilton; SAM WEBER, Asst. Sales Mgr. at Hamilton, and TANY (but "Tony" to nearly everyone) AGRONIN, Chief Engineer of Shartle Bros. Division at Middletown, O.

ALLIS-CHALMERS TRIO

Representing Allis-Chalmers Co. of Milwaukee at Savannah were (l to r): STEVE HOGG and JOE DUNCAN, both from Atlanta office, and WILLIAM H. TOCK, their lime kiln expert from Milwaukee.

NEED AN ADDING MACHINE

For total number of years and meetings attended in South by this trio, call for adding machine (l to r): J. C. "POP" STEWART, veteran Southern rep. for Black-Clawson Co.; J. D. ROBINSON, whose Atlanta firm represents Hoppenstall and other suppliers, and W. E. GREENE, of W. E. Greene Corp., New York, for Stowe-Woodward, etc.

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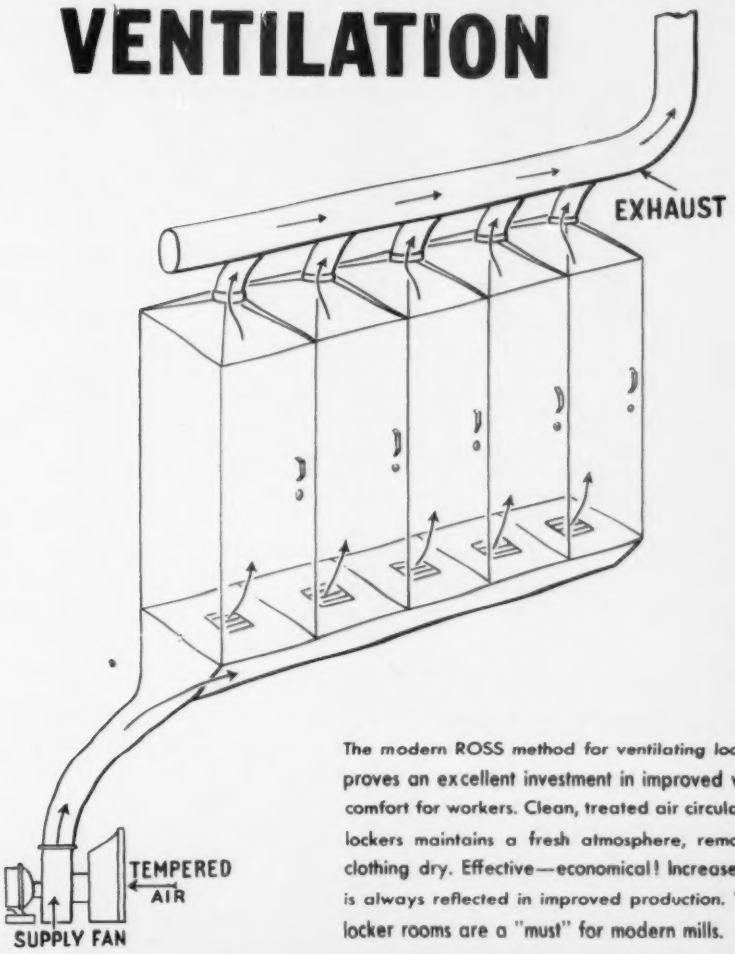

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Electrical Engineering

SELECTED SAVANNAH MEETING PAPERS

By M. J. Osborne

Electrical Engineer, Crossett Paper Mills, Crossett, Ark., and Member of TAPPI Electrical Engineering Committee

FOURDRINIER LOAD REQUIREMENTS

A TAPPI Electrical Engineering Committee paper was read by Walter Mikelson of General Electric Co. This work was initiated and sponsored to re-evaluate existing TAPPI practice for calculating Fourdrinier power requirements. Eleven machines were tested and results were plotted comparing each of the machines.

The Fourdrinier section load is considered in three main divisions in this study:

1. The flat box vacuum load or friction load between the flat suction boxes and the wire.
2. The couch roll vacuum load.
3. The residual friction load of all remaining sliding and rotating components.

One of the surprising things that was disclosed in this study is that suction efficiency may be expected to vary between 13% and 95% on different machines. Suction efficiency is here used as average box vacuum divided by header vacuum. In four runs on one machine, the average suction efficiency of the five boxes was 15%. Header vacuum was actually once completely removed from all flat boxes and paper continued to pass through the machine. Vacuum gauges were installed on the flat boxes of each of the machines tested; header vacuum readings were recorded, however, for calculating suction efficiency.

The procedure for testing is quite simple: the setup required meters on the couch motor, vacuum gauges on each flat box and on the couch roll. A surface speed indicator was also required. Prior to a shutdown, a set of readings is taken, shutting off flat boxes one at a time, starting at the dry end. The couch vacuum is then removed.

The resultant general formula based on on analysis of the three contributing Fourdrinier loads can be written as follows:

Overall Fourdrinier Power Constant—HP per 100 FPM per inch width of wire equals $0.0025 + 0.000025X$ wire speed in FPM plus. $0.0006 \times$ couch box vacuum in inches plus

$0.0000059X$ average vacuum at boxes, inches hg
$\times$ percent hole area in cover
$\times$ width of cover
$\times$ number of boxes

These three terms, when added together, give the overall Fourdrinier power constant—HP per 100 FPM per inch width of machine—from which the horsepower of the motor can be calculated.

A practical application is included in the paper which illustrated that the average flat box vacuum allowable using present accepted TAPPI constants is quite small.

Discussion of Paper

The substance of some of the discussion of this paper is here reported:

Question: If the present accepted TAPPI constants are too low as shown in Figure I, why are there not more overloaded couch motors in the industry?

Answer: Luck, I guess, and I suppose that the mills do not attain in practice the flat box vacuums that the header gauges

OSBORNE WAS AT OAK RIDGE BEFORE CROSSETT MILL

Electrical engineering appeared to be a dominant subject—as it frequently is in such meetings—at the big annual Engineers Conference held in Savannah, Ga.

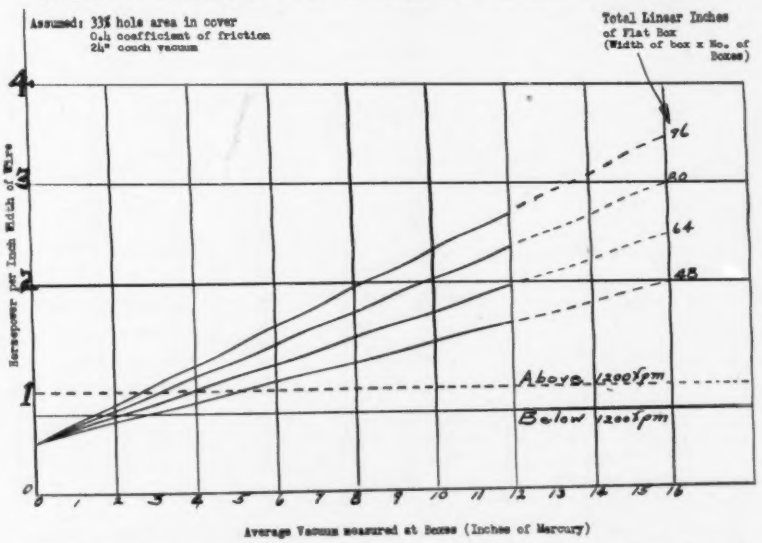
PULP & PAPER invited one of the outstanding young electrical engineers of the industry, M. J. (Johnny) Osborne (shown in picture), to write a summarization and appraisal. It is presented on this page. Mr. Osborne, incidentally made his own selection of the papers and discussions he wished to review on two different meeting days.

Mr. Osborne is electrical engineer of Crossett Paper Mills, Crossett Industries, Crossett, Ark., where highest machine speeds outside of tissue have been recorded. Born in West Palm Beach, Fla., he graduated from Georgia Tech in 1944, member of Tau Beta Pi and Eta Kappa Nu, honorary engineering and electrical fraternities.

For two war years, he was electrical engineer at Oak Ridge, Tenn., in the process improvement and electro-magnetic separation activities of the Tennessee-Eastman division which was engaged at that Atomic Energy development site. Later he was engineer on turbo-electric tankers of the Merchant Marine—from Nov. '45 to Mar. '46 when he joined Crossett.

It is interesting to note that he and Mr. Campbell, a Kimberly-Clark maintenance specialist, who writes another review for PULP & PAPER readers elsewhere in this issue, both chose a paper by H. R. Meyer of Westinghouse—their approach to it being from their different points of view.

FIGURE 1—HORSEPOWER PER INCH WIDTH FOR 1,000 F.P.M. MACHINE


Assumed: 33% hole area in cover
0.4 coefficient of friction
24" couch vacuum
Total Linear Inches of Flat Box (Width of box x No. of Boxes)
Horsepower per Inch Width of Wire
Above 1200 fpm
Below 1200 fpm
Average Vacuum measured at Boxes (Inches of Mercury)

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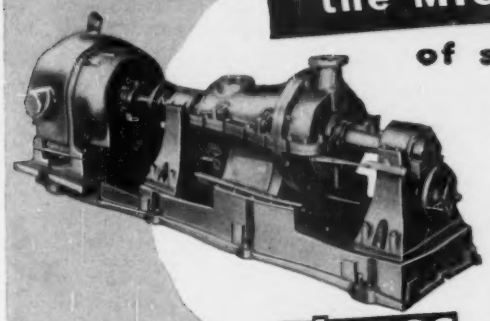

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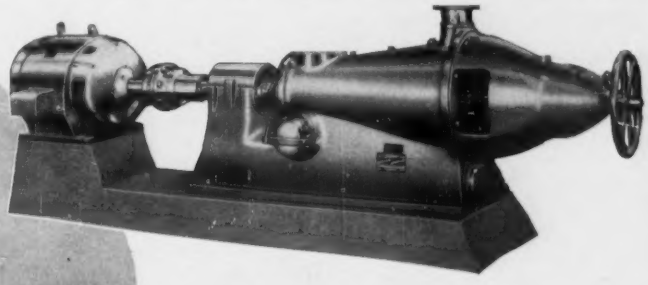

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*942 as of May 1, 1951

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BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

indicate or for which the machine was designed.

Question: Are drive designers going to shave horsepower recommendations as did NEMA in their frame size squeezing so we mill people won't have that little extra in horsepower that is required for unusual loads and for good regulation?

Answer: No. In every case, the calculated constants based on the new formula are constants that are larger than the measured constants and follow the measured values closely. The TAPPI constants vary from twice too much for Machine A to only half enough to handle the load for Machine D.

Question: How do you find the average flat box vacuum on a machine that has not been built?

Answer: I don't know unless it would be experience on similar machines or possibly a knowledge of the freeness of the stock would help determine the average flat box vacuum.

Question: Do you feel that you should have more data to support your findings?

Answer: We want all of the data we can get.

ELECTRIC CABLE INSULATION

"Properties of Synthetic Rubber And Thermoplastics as Insulation for Electric Cables" was read by E. W. Davis of Simplex Wire & Cable Co., Cambridge, Mass.

Two of the predominant causes of cable failures in the pulp and paper industry are:

1. Deterioration due to age and oxidation.
2. Deterioration due to exposures to oil, water, sunlight and chemicals.

The paper pointed out how, by employing some of the synthetic rubbers and thermoplastics available, the wire and cable failures due to these causes can be reduced. Comparisons of the properties of synthetic and natural rubber compounds were presented.

Curves were supplied which showed the deterioration of heat resistant natural rubber insulation and a commonly used synthetic rubber (GR-S) during a reasonably severe accelerated aging at 140° C. At the end of four days at 140° C., the two essential physical properties of tensile strength and compression resistance show little or no change for GR-S while those for natural rubber are only approximately one-third of the original value. Another figure showed the relative light resistance of GR-S synthetic rubber and natural rubber. This greater resistance to light checking of the synthetic rubber is of importance where the insulation is exposed to sunlight such as the terminations of signal or control cable. Tables were included which listed the electrical and physical properties of polyethylene and ordinary polyvinyl chloride—together with their favorable and unfavorable characteristics as insulation for power service. Polyvinyl chloride deforms at room temperatures and slumps at high temperatures and cracks and shatters when cold. Polyethylene is dangerous for power cables. A short circuit which would not damage ordinary cable insulation would melt polyethylene.

Members of TAPPI with electrical interests were disappointed that time did not permit the reading of the "Electrical Cable Investigation Report" by A. O. Mortenson, of St. Regis Paper Co., Pensacola, Fla. Mill electrical men are constantly required to decide which insulation is best suited for the many electrical services operating under varying conditions of temperature, humidity and chemical dust or fumes such as encountered in pulp and paper mills. We mill men are very interested in the work of this sub-committee and in the development of a set of standards or a guide to assist us in handling this difficult problem. We are looking forward to the further work of this Committee.

PRESS SECTION LOAD REQUIREMENTS

R. R. Baker, of Westinghouse, made a preliminary report on this at the electrical engineering discussion session. This work is being done to evaluate the press section "Recommended Power Constants" with respect to operating conditions or machine characteristics. It has been generally felt that the power requirements of press sections are dependent on a large number of variables,

A total of 262 power test readings covering 108 different machine sections were obtained from 53 sectionally electrically driven paper machines. The data was tabulated indicating:

(a) Test reading identification
(b) Power data classification
(c) Operating roll vacuum (where used)
(d) Power requirements (HP per inch per 100 FPM)
(e) Applied NIP pressure

A chart was prepared showing the relation between the press power requirements and the roll nip pressure. On this chart the average power requirements have been blocked-in over the range of nip pressures applied. On this same chart a curve was drawn which is represented by the equation:

$$HP/in.\ 100\,FPM = .0055 + .0095\left(\frac{P}{100}\right)0.61$$

This curve appears to coincide quite closely with average power requirements. Maximum and minimum readings were prepared which serve to identify the points of extreme variation.

It appears that the vacuum applied on a suction type press has little effect on the actual power requirements. So far as could be determined, there appeared to be *no* significant relation between the press section power requirements and

(a) Weight of sheet produced
(b) Roll diameter
(c) Roll covering
(d) Type of press bearings, or
(e) Press felt length and number of carrying rolls.

After reviewing the power data obtained it was recommended that the power constants for the main press section of cylinder or fourdrinier machines be modified as follows:

Main Press Section — Plain or Suction Type	*Recommended Constants HP/Inch Width Per 100*	*F.P.M.*
	NRL	*RDC*
Pair Main Rolls (All Paper & Board Wts.)	$.0055 + .0095\left(\frac{P}{100}\right)0.61$	.030
Top Roll Only		.010
Pair Main Rolls (Pulp Sheets)	$1.5\left[.0055 + .0095\left(\frac{P}{100}\right)0.61\right]$	.045
Top Roll Only		.015

NOTED E. E. EVENTS

DONALD PUTMAN (left), Manager of Pulp, Paper and Lumber industries sales for General Electric, Schenectady, N.Y., for past 3 years, headed G.E. delegation which carries what it learned back to several pulp and paper centers. He went to college at North Dakota State; Vermont-born father had two careers —medical and music.

J. L. VAN NORT (right), Pulp and Paper specialist for The Reliance Electric & Engineering Co., Cleveland, O., fast growing custom builders for electrical applications in industry, and likewise, with him, were Reliance men from paper centers, noting the events on electrical engineering program.

Also note (1) as applied to the main press section should be modified to read:

"The recommended power constants for the main press rolls are based on:

(1) A maximum nip pressure not exceeding 300 lbs. per inch for all paper and board weight formations.

(2) A maximum nip pressure not exceeding 900 lbs. per linear inch for pulp sheet formation."

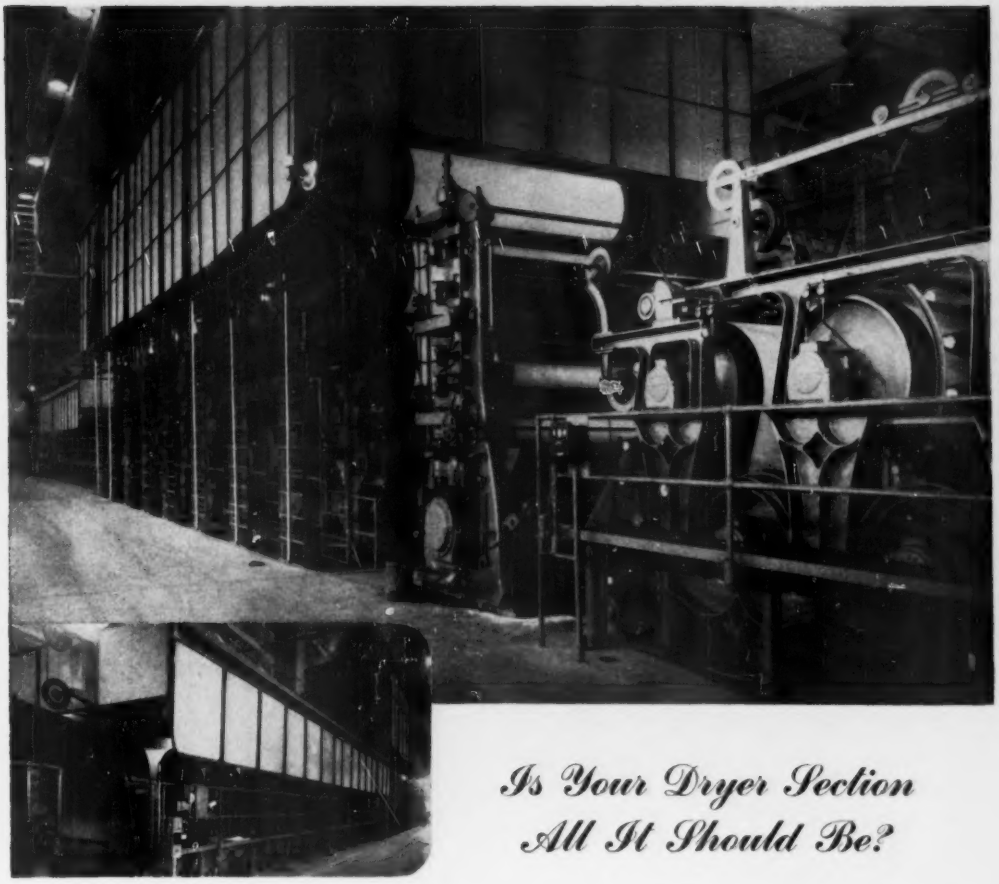
This survey also included 19 test readings on smoothing press sections. In view of these findings it is recommended that the NRL constant for the smoothing press section be reduced to .0070 and that the RDC constant of .0120 be retained.

ELECTRICAL MAINTENANCE

H. R. Meyer, of Westinghouse, presented this paper. The importance of the establishment of systematic records and the necessity of having these records kept by one man was emphasized.

The dangerous practice of using carbon tetra-chloride for motor cleaning was discussed and alternative methods were suggested including the blast method using ground corn cobs.

Of note was the mention of the Class H



Is Your Dryer Section All It Should Be?

• Is the capacity of your dryer section adequate? Could you step up the speed of your wet end if you had more dryers?

Have you automatic transfers on your rope carriers?

Is the lubricating means automatic and leak proof?

Have you the required doctors on the wet end dryers?

How about your steamfits and syphons —an effective drainage system?

Do you have air-operated brakes on your dryer section—remote control operation? Inching drives?

All such features and controls are present on the more recent dryer sections built by Black-Clawson.

If required to enlarge your dryer, assign the work to Black-Clawson and include the above improvements.

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Associate: THE ALEXANDER FLECK LTD., Ottawa, Canada
Subsidiary: B-C INTERNATIONAL, LTD., Greener House
66/68 Haymarket, London, S. W. 1, England

type of insulation which utilizes glass tape, mica and silicone varnish for use in extremely high temperatures 180° C.-250° C.

One particular point was that if a piece of electronic equipment is working properly instruct all persons to keep their hands off of it.

High Points of Discussion

The substance of several high points of the discussion are here reported:

Comment: Sir, you state that the mill personnel are responsible for maintenance; I feel that you manufacturers have a responsibility for maintenance to us in the mills. You build and sell and supervise the installation of your equipment, but then leave it up to the customer to figure out how to operate and maintain it.

Comment: Thank you, sir. I wasn't sure I was bringing anything to this meeting, but I know that I now can take something back to the factory with me. I appreciate your comment and you can be sure something will be done about that condition.

Comment: Our mill was faced with the problem of training electricians, some of them old and set in their ways. My problem was to find training material not applied directly to the subject.

Comment: Our mill recently purchased an electronic paper machine drive. We found it necessary to set up training courses using motion picture training films from various sources and to use prepared lessons of our own and a blackboard and to use devices such as tube testers, vacuum tube voltmeters in the class room. The trouble with most training films (I am thinking of a G.E. course we used) that there seems to be too large a step after the explanation of ohms low. We need more training films made available that will help us develop our electricians into trouble shooters. We try to tell our men to look for their trouble in wiring, rheostats or such, but they still plug in a new set of tubes the first thing, just to see if that won't do the trick. Another thing we try to emphasize with such equipment is that unless the electrician has a fair understanding of what he is doing, to keep his hands off of the adjustments.

Comment: I think there are many such training films available. The trouble is that they were advertised and circulated several years before the equipment came out. We should set up a program to make this material available to the mills and we should send around bulletins to the mill people telling them what is available.

Krantz, Machine Erector, Dies in Okla.

James W. Krantz, 33, field service representative of The Black-Clawson Co., Hamilton, O., died Oct. 15, at Claremore, Okla., following an appendectomy a week previous.

Mr. Krantz, who set up Sutherland Paper Co.'s last machine at Kalamazoo, and more recently the one for Container Corp. of America at Los Angeles, was in Oklahoma directing erection of the paper machine being installed at the new Pryor, Okla., mill of National Gypsum Co.

BROTHERS IN PULP AND PAPER

REUNION FOR THREE BROTHERS and their wives was made possible at Savannah Engineering Conference. They are (l to r): DR. CHARLES E. HARTFORD, Mgr. of Pulp & Paper Div., Union Bag; MRS. WILLIS G. HARTFORD and her husband, Asst. Production Mgr., Champion-International mill, Lawrence, Mass.; MRS. C. E.: and JOE E. HARTFORD, Sales Engineer, Black-Clawson Co., Hamilton, O. Brothers were born in Plattsmouth, Neb. See their story in these columns.

BAMBOO COTTAGE HOSTS AND GUESTS

Group at Heppenstall Co.'s cottage at Savannah meeting (l to r): W. G. BRASFIELD, Pulp Mill Project Engineer in Union Bag's Construction Engineer Dept., Savannah; JOHN WILSON CORRISTON, Dist. Mgr., E. J. Lavino & Co., 1528 Walnut St., Philadelphia; BETTY WOOD and her husband, HAROLD WOOD, Pulp and Paper Mill Sales, Heppenstall Co., Pittsburgh.

Brothers in This Industry

The Savannah Engineering convention provided a reunion for three of four Hartford brothers in the pulp and paper industry. All were born in Plattsmouth, Neb. All went to Iowa State College, Ames, Ia.

Dr. Charles E. Hartford, the eldest, started his career in the famous Maizewod Products of Dubuque, Ia., which attracted considerable notice some years ago when it began making paper from corn stalks. Then he went to International Paper at Panama City, Florida. Today he is No. 2 man for Union Bag at Savannah as manager of the Pulp and Paper Division there, reporting to Res. Mgr. Tad Dunn.

Brother "in the middle" is Willis G. Hartford. He started with U. S. Gypsum in Kansas City. Today he is assistant production manager of the joint Champion-International mill at Lawrence, Mass.

The next in line is Joe E. Hartford, now sales engineer with Black-Clawson Co., working out of Hamilton, O. He was on the Pacific Coast with U. S. Gypsum in Los Angeles, then to their Kansas City and Jersey City plants, the latter as manager. He was with Philip Carey Mfg. Co., Lockland, Ohio, as production manager for all their paper mills.

A fourth Hartford brother who couldn't make it to Savannah—and small wonder—is Bob Hartford, in the office staff of Pacific Coast Mills of Washington, Bellingham, Wash.

PROCTOR & GAMBLE MILL

One of the finest blocked-in stands of timber available in the South will be right at the back door of the new dissolving wood pulp mill being built by the Buckeye Cellulose Corp., subsidiary of Proctor & Gamble Co., at Perry, Florida.

BUCKEYE MILL ENGINEERS

NORMAN GIBBS (left), Dissolving Pulp Process Consultant, and H. W. MEAKIN (right), Engineer for J. E. Sirrine Co., are engaged in the new Proctor & Gamble project to build a market dissolving pulp mill at Perry, Florida. This company, through its Buckeye Cellulose Corp. subsidiary, has a Memphis cotton linters plant but has turned to pulpwood because of its greater supply and price stability for high alpha pulp.

Living at Perry and on the job as consultant for Buckeye is Norman Gibbs, a veteran of the dissolving pulp industry, who years ago, was a Rayonier mill manager at Port Angeles, Wash., but in recent years has been active in the Southeast as well as doing consulting work in Alaska and in British Columbia for Powell River Co.

Buckeye purchased the excellent 450,000 acres of timberland of Brooks-Scanlon Co., which has a sawmill at Foley, Fla. This latter company is closely associated through top personnel with Powell River Co. All of the wood is close to Perry.

Proctor & Gamble headquarters are at Ivorydale, Cincinnati, O. This company makes bulk and sheeted chemical cotton linters at a 200-tons per day plant at Memphis, with 10 digesters and 2 Black & Clawson Fourdriniers.

William P. Bowld, Gwynn Bldg., Cincinnati, is the president of the Buckeye Cotton Oil Co. and top official in charge of its chemical pulp division. Top company engineer for the new project is Joe Walter, who headquarters at Ivorydale. J. E. Sirrine Co., of Greenville, S.C., has been retained on the project.

It is understood that Buckeye has turned from linters to woodpulp because of the latter's greater stability as a raw material supply and in price. Wood pulp has far outstripped linters as a pulp for rayon, cellophane and plastic products.

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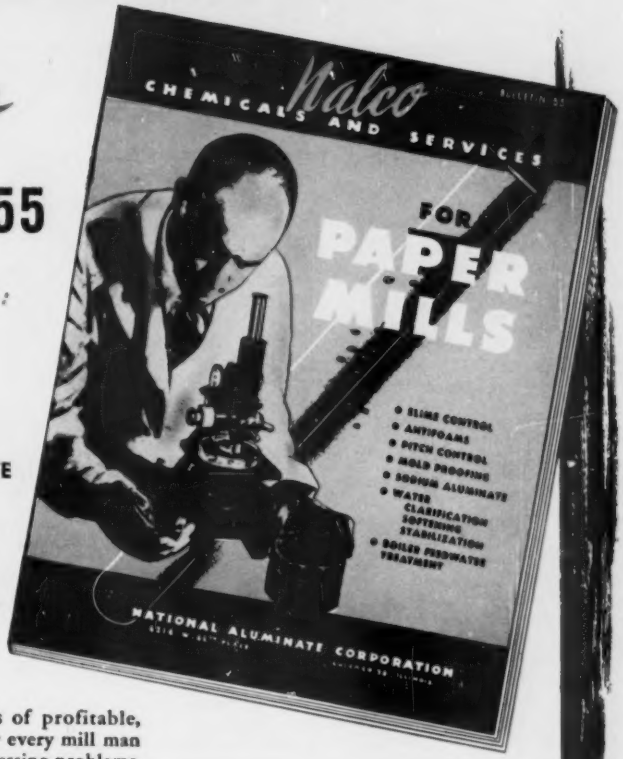
- BOILER FEEDWATER
  TREATMENT



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Maintenance Review

IDEAS ADVANCED AT SAVANNAH

By Charles J. Campbell

Maintenance Specialist, Coosa River Newsprint Co., Coosa Pines, Ala.

A new meaning was given to the letters—TAPPI—at the Sixth Engineering Conference by H. R. Meir of Westinghouse Electric Corp. To all maintenance-minded personnel they stand for "Technical Association for Preventive Maintenance Practices and Inspection" work. It was pointed out that it is most important in establishing a preventive maintenance program to get people to stop long enough in their daily activities of operating a plant and its equipment to think about preventive maintenance. It is primarily doing today what may well save you from tomorrow's troubles.

It was emphasized that systematic record-keeping is a "must" with adequate analysis of the difficulty, and a record of what was done to correct the trouble.

The speaker touched upon the maintenance of electrical equipment, pointing out that the three greatest enemies to continuous operation of electrical equipment were dirt, grease and moisture. The use of considerable quantities of water in the pulp and paper making processes provides an ever present moisture problem. Electrical equipment can be suitably protected in most cases against moisture. By careful selection upon initial installation, this protection can be obtained by being built into the equipment.

Keeping electrical equipment clean is just as important as keeping it dry. In cleaning electrical equipment, certain precautions should be taken to prevent damage to windings and other parts. The following simple instructions are recommended:

Wipe off dirt with clean dry cloth, never use waste. Blow out dirt with compressed air, making sure that it is dry and that the pressure does not exceed 50 pounds. Draw dirt out of ducts with a vacuum. Remove dirt with solvents. Carbon tetrachloride is frowned upon by safety men because of its dangerous effects upon workmen who might breathe the fumes. There are commercial solvents available which will do an equally or better job than carbon tetrachloride.

AUTHOR OF THIS REVIEW with one of his Kimberly-Clark colleagues, snapped on terrace at convention hotel, General Oglethorpe. At left is C. G. R. (RUSTY) JOHNSON, Assistant Chief Engineer of Kimberly-Clark Corp. headquarters, Neenah, Wis., and at right, CHARLES J. CAMPBELL, Maintenance Specialist, Coosa River Newsprint Co., Coosa Pines, Ala. Trained in K-C's Staff Engineering at Neenah, Mr. Campbell was sent to Coosa Pines when the new mill was built there by Kimberly-Clark.

It was further pointed out that lubrication is very important in obtaining trouble-free operation of electric motors. Considerable judgment must be exercised in the greasing of motors because too much grease is just as bad as not enough. Too much grease is frequently responsible for hot bearings and, when applied with a pressure gun, the unthinking worker can blow the seals and force grease into the windings which may result in equipment shutdown, or a possible motor fire. If a bearing failure should unfortunately happen on an electric motor, the replacement bearing should be very carefully handled. After its application to the motor shaft, the bearing should be flushed out with a neutralizer to remove acids left by the workmen's hands, and then satisfactorily packed. In the process of the bearing installation, the bearing carton should be checked for the degree of fit. Vendors are now showing the degree of fit stamped on the bearing carton. It is important to replace the damaged bearing with one with the same degree of fit, especially in high speed motors, or a failure could result. High speed motors usually have free running bearings and expansion of a tighter bearing from the running temperature could remove the clearance in the bearing, resulting in seizure and failure.

Maintenance on electrical equipment should take the form of "Look, Feel, and Listen." Look for outward appearances of faulty operation; feel for vibration, looseness and heat; and listen for any noise or unusual sounds.

Electronic Equipment

In regard to electronic equipment maintenance, it was considered that if it was working within reasonable limits, to leave it alone. It should be recognized that electronic equipment is entirely different from electric motors and their controls. In electronics, there is nothing to "Look, Feel or Listen" to. There are so many places to look for a difficulty, and can only be determined by constant check of the machine's performance.

It was pointed out that the mills have a very real problem in training personnel in electronics. It is felt that the vendors of electronic equipment fall short in their duty to the customer in passing on sufficient and simplified information for study by the maintenance worker. While training courses are available from some vendors, they usually advance quickly into the electronics of their equipment, without much preparation or background which leads up to the electronic circuits involved in their particular piece of equipment. It was pointed out that the vendors of electronic equipment have a very real obligation to the customer in giving as much information as possible with probable hints on difficulties and corrections. The success, future progress, or failure of their electronic equipment hinges largely on the quantity and quality of maintenance information passed on with their equipment.

Steel Windows

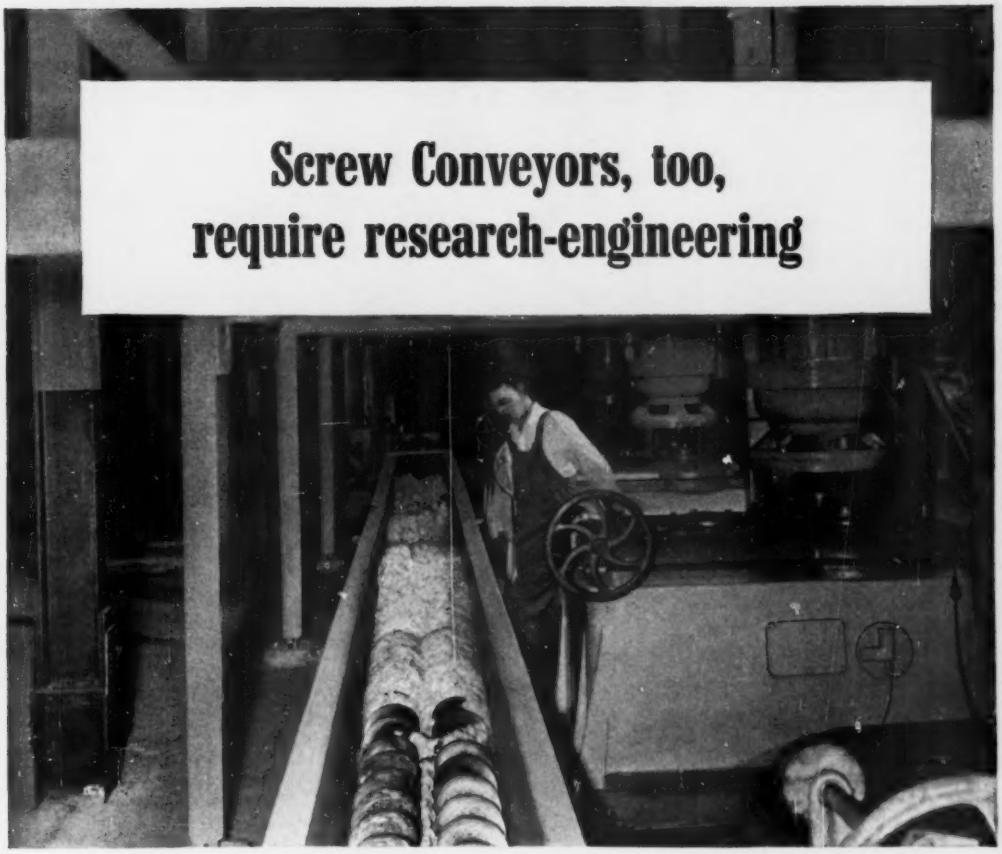
In the maintenance of steel windows in pulp and paper mills, K. S. Frazier of Detroit Steel Products Co., pointed out that the extreme humidities and acid and alkaline vapors, found in the various divisions of a paper mill, create a maintenance

MAINTENANCE—AN INTERESTING CONFERENCE SUBJECT

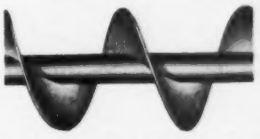
Maintenance, of course, was one of the important subjects presented at the Engineering Conference at Savannah, Ga., in October, attended by pulp and paper engineers from far and wide. So to its readers, PULP & PAPER is pleased to bring this brief review for the "mill-man-in-a-hurry" of the maintenance discussions. It is written by an expert—by Charles J. Campbell, who is maintenance specialist of the Kimberly-Clark operating staff at Coosa River Newsprint Co., Coosa Pines, Ala. Mr. Campbell was an interested listener at the Savannah sessions.

Born in Prairie-du-Chien, Wis., Mr. Campbell graduated from the University of Wisconsin in 1929, stayed on for a masters in physics in '32, and joined Staff Engineering of Kimberly-Clark Corp., at Neenah, Wis., where he was engaged up to the time he moved to Alabama when the new kraft and newsprint mill was built there.

Screw Conveyors, too, require research-engineering



Link-Belt Screw Conveyors have a multitude of applications in handling bulk materials. Here wet pulp is carried from filter to six-cell bleach chest by means of 100-foot screw conveyor using twin 9-inch diameter screws.



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problem above the average for industrial plants. It is the lack of sufficient protective maintenance which allows corrosion to gain the advantage, requiring repair and frequently replacement.

Proper installation plays a large part in the reduction of maintenance of steel windows. If masonry openings are prepared so that windows can be installed after masonry is complete, means are thereby provided for easy removal of the window and thus simplifies maintenance. It was pointed out that the offset detail for window installation design is superior to the flush detail, because the offset detail affords no pocket in the masonry into which moisture laden with acids or alkalies can accumulate and cause corrosion of the sill.

Painting frequently applied to steel windows after proper wire brushing is considered a good protection, but we are reminded that no paint used today is 100% impervious to moisture. It is recommended that the hot-dip galvanizing of steel windows and hardware, which is now commercially available, will provide a surface treatment which has proven superior as an enduring protection. In this surface treatment the zinc is electro-positive to the iron and protects by what is termed self-destruction. If a part of the steel is damaged or marred, causing the zinc surface to expose the steel to the moisture conditions, an electrolyte is formed and the surrounding zinc surface will plate over the mar or scratch and prevent further corrosion of the steel.

Hot-dipped galvanizing is also considered economical on initial installations because no painting is required, and a definite maintenance saving for the same reason because painting is never required.

Maintenance of Insulation

Maintenance of insulation in pulp and paper mills is a very real problem. In a discussion led by H. F. Parker, of New York & Pennsylvania Co., it was pointed out that the ultimate purpose of investing in insulation is to save fuel, and to attain the best saving, the insulation project should be well planned. It would appear that there are three phases of a well-engineered insulation installation; namely, selection of the most suitable type of insulation, arrangements for a well designed installation, and adaptation of a regular inspection and maintenance plan. This inspection and maintenance plan is most vital if damaged insulation is to be discovered, and an early repair made and, also, results in a material saving where a leak could damage a whole insulation job if not quickly repaired.

A well-engineered insulation project will provide for sufficient expansion of the insulating material, taking into consideration the temperature range of the pipe or equipment to be insulated. The covering should be tight. In the case of pipes, it is recognized that all pipes do not have true dimensions, but an insulation can be considered sufficiently tight on a cold pipe surface if it just slides on. Expansion of the pipe when heated must be considered and a sliding fit will be sufficiently tight on a hot pipe. Vibration is another factor to be considered in the engineering of a good insulation job. Vibration can induce cracks and openings to the cover and insulation and destroy the continuity of the insulation.

The insulation maintenance program should include an education program to keep workmen from using insulated pipes as supports for scaffolding and other contruction platforms. Besides making the insulation cover unsightly, any loading of the insulation tends to compress it and destroy the air spaces in the insulation, a vital part of its efficiency. It was brought out that at one mill they painted all insulated lines white. The dirty smear caused by the scaffold plank had a psychological effect upon the workmen causing them to refrain from using the insulated pipes as scaffold supports. In another mill the program is to protect the insulation with aluminum sheet rolled in tubes. This practice is interesting because it has been generally held that aluminum is susceptible to the corrosive vapors present in paper mills, and especially in kraft mills. A good maintenance program will always include protection of the insulation by a metal sheath or cover wherever it is subject to damage by the workmen in the normal course of their operation of the machine.

Use of Asbestocite

An interesting discussion brought out the physical properties and advantages of Asbestocite casing, a weatherproof cover for insulating tanks. This material comes in 4 ft. x 8 ft. shingles and can be bent to a diameter of 10 ft. The outside of the tank is prepared with metal studs much like the frame of a house, except the studs are insulated from the tank by the fastening blocks. Insulation bats are then set between these studs and the Asbestocite sheets are fastened to the studs in shingle fashion with approximately a three-inch overlap.

As yet, no method using Asbestocite has been developed for the top or dome tank. The usual practice is to build up a hard insulated surface much in the same manner that ply roofing is installed. Besides affording quick installation, the finished job has a clean appearance and requires no painting.

AT SAVANNAH—TOP ROW (l to r):

ROBERT T. INMAN, Chief Engineer of Union Bag & Paper Corp., one host mills. Joining U B from Beloit, he heads Construction Engineering Dept. of some 60 men and maintenance group of about 20. Born in Wisconsin, he is U. of Wis.'25.

JAMES H. DAVIDSON, Chief Engineer of Minnesota & Ontario Paper Co. and Ontario-Minnesota Paper Co., Ltd., headquarters in Minneapolis.

RICHARD R. CHASE, Asst. Supt. of Union Bag's Mill Technical Dept. and Supt. of its By-Products Dept.

LEE EBERHARDT, Pulp Machinery Division representative of The Bauer Bros. Co., Springfield, Ohio.

At extreme right: CONSTANT G. G. NINCKBLOK, Research Chemist and Laboratory Director of Holland's biggest mills—Van Gelden Zonen sulfite, groundwood and paper mills at Velsen, near Amsterdam. He was honored at luncheon.

LOWER ROW (l to r):

ED FADDEN, Project Engineer, General Engineering Division, The Mead Corp., Chillicothe, Ohio.

DWIGHT E. JONES, of E. D. Jones & Sons Co., Pittsfield, Mass.

HAROLD Y. "Charb" CHARBONNIER, Assistant Technical Director of Union Bag at Savannah.

WM. Y. IRWIN, Research Dept., Congoleum-Nairn Inc., Cedarhurst, Maryland.

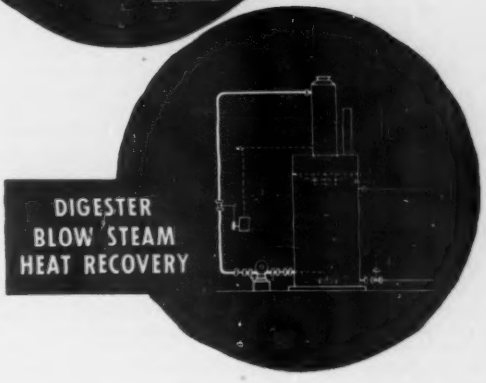
New Rayonier Offices in New York

Rayonier Incorporated has leased the entire 24th and 25th floors in the tower of the new 32-story air-conditioned Chrysler Building East, for a long term, according to Clyde B. Morgan, president of Rayonier. Rayonier will move its executive and sales offices there about the first of the year.

Beetle Damage in South

Widespread killing of valuable pine by bark beetles continued in 1951 in the South. The Department of Agriculture estimates more than 50 million board feet were ruined in summer months. The Southern pine beetle was especially troublesome in east Texas and eastern North Carolina. The black turpentine beetle caused damage in North Carolina, Florida, Mississippi, and Louisiana. The pine engraver beetles killed pines throughout the South.

a *plus* factor in the paper dollar



Recent installations by these three leading paper manufacturers confirm once again not only the sound economics of turpentine and digester heat recovery but also the continued acceptance of Foster Wheeler equipment by pulp mills:

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These properly engineered systems enhance the credit side of the ledger in two ways.

First, two to four gallons of crude turpentine, a particularly valuable by-product on today's market, are recovered from every ton of pulp.

Second, valuable Btu's from digester blow steam are recovered to heat mill water for pulp washing.

Bulletins describing these Foster Wheeler recovery systems will gladly be sent on request.

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FOSTER WHEELER

Paper Machine Talks

DRYERS — VENTILATION — WET ENDS

By George L. Swallow

(Review of Savannah Papers by a Paper Mill Engineer)

HIGH PRESSURE DRYERS

Thirty-three to fifty percent more production with the same dryers! Yes, it is possible, if you were looking into the future and bought high pressure dryers when you put in your machines. Some mills in this fortunate position are increasing their production today by this very means. Others are installing high pressure dryers to replace old, existing dryers incapable of withstanding these pressures. An increase in production of one-third is possible by raising steam pressure from 30# to 75#, a 50% increase in production by a pressure increase from 30# to 125#. Such are the possibilities as outlined by Charles P. Spalding of Beloit Iron Works in his paper at the Sixth TAPPI Engineering Conference.

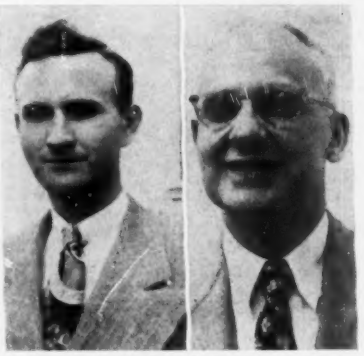
Drying paper with high pressure steam, in the 125# range, is a growing trend in these times of ever expanding production. It is an excellent way to greater tonnages without enlarging the dryer section, which is often crowding the machine room already.

However, the advisability of gaining production by this means can only be determined by a careful study of the factors involved. The steam balance is of prime importance, especially in a new mill or with a new machine. Also, only some sheets are known to be suitable for drying at the higher temperatures used. When the sheet is right and mill economics make the use of high pressure steam attractive, a way is open to greater production which is relatively simple to engineer and easy for the paper maker to live with.

The trend toward higher pressures started some years ago on Yankee dryers, where high speeds and high drying rates have been the rule. The pressures on these machines have been increased to the point where increased steam temperature is nearly offset by the greater wall thickness required and hence no gain can be expected from further increases. It was pointed out that the resistance to heat transfer is made up of three parts; the vapor and water film on the inside surface of the dryer, the dryer roll, itself, and the air film between the outside of the dryer and the paper. On a Yankee dryer where the sheet and the dryer are in intimate contact the outside film coefficient is relatively low and the dryer wall contributes as much as 75% of the total resistance to heat transfer. On a standard dryer of one inch shell thickness, the outside film coefficient is by far the greatest of the three, and diminishing returns in drying due to excessive wall thickness are not likely. The inside film, wall thickness, and outside film coefficients comprise respectively 2%, 10% and 88% of the total on the above standard dryer.

The effect of increased pressures is then, to provide higher temperatures within the dyers to make available greater temperature gradients across this heat resistance, causing heat to flow more rapidly to the sheet. The increases in drying rate previously cited are a measure of the success in increasing heat flow by this method.

Along with its advantages, high pressure steam also present its problems. Besides the obvious ones of making sure that all components of the steam and condensate system are adequate for the increased pressures, there is the question of bearing performance under increased temperature, which leads immediately to a study of the lubricating system. It is often found that a change in type of oil, or rate of flow, or both is indicated as an essential to proper functioning of the bearings. The effect on dryer felt life is often questioned. It is said that felt life is not adversely affected as long as the machine is not stopped for prolonged periods while the dryers are at full temperature.



GEORGE L. SWALLOW, (left), Paper Mill Engineer in a large Southern kraft mill, selected some meetings and discussions at Savannah which interested him most—and wrote this review for PULP & PAPER readers. One paper he discusses was by CHARLES P. SPALDING (right), of Beloit Iron Works. It aroused one of the liveliest and best attended discussion periods at the entire Savannah meeting.

Discussion Brings Out New Angles

Questions and discussion from the floor led to many interesting sidelights with respect to drying at high steam pressures and drying in general. The first of these was an inquiry as to what was good performance with respect to outside dryer surface temperature for a given steam temperature. It was agreed that this would vary with conditions and the opinion was expressed from the group that a surface temperature of 5° to 20° below the saturated steam temperature was good. Others took exception to this on the ground that surface pyrometers and dryer surface conditions were so non-standard that no accurate figure could be established. It was felt that accurate or not, regular temperature measurements of the dryer surface are a valuable aid in keeping the dryer performance up to high level.

The possibility of other heating media, such as Dow-therm, as an alternative to high pressure steam was discussed. Such a medium would allow high temperatures at low pressures. One of its obvious disadvantages is its low latent heat of vaporization. Thus exceedingly high flows would be involved, creating a real problem in dryer design to handle the flow.

Gas fired dryers have been tried as an alternative to steam but have not proved very satisfactory.

The means by which the resistance to heat flow was calculated to obtain the figures quoted above was questioned. The inside film coefficient, and wall thickness coefficient were calculated from standard data. The outside film coffiecient was calculated by difference, knowing the total coefficient from paper machine performance.

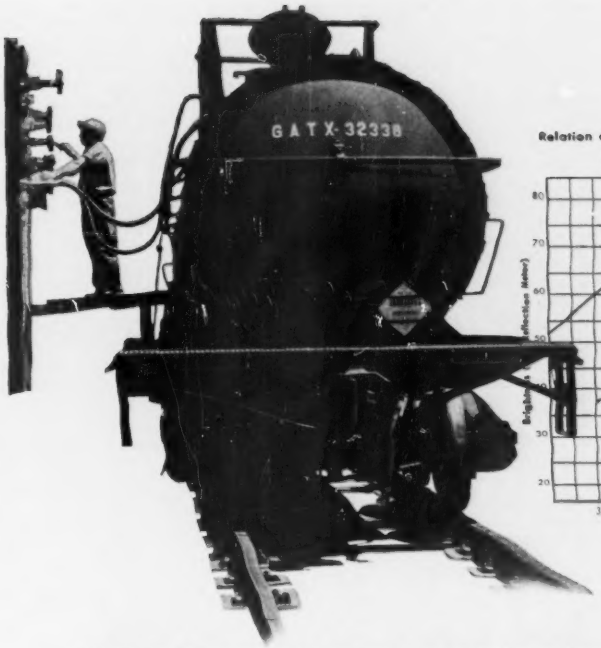
(Continued on Page 66)

A PAPER MILL ENGINEER'S SELECTIONS AT SAVANNAH

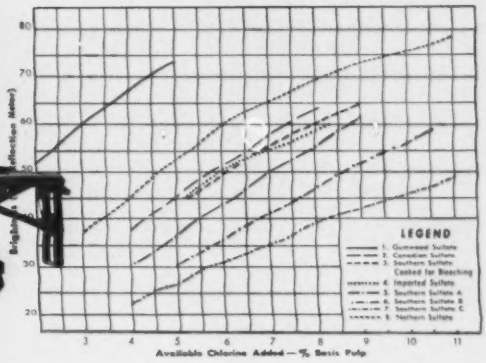
To paper makers and paper mill engineers there were a number of papers of special interest given at the big annual Engineers' Conference at Savannah, Ga.

For a quick and yet, a thorough, report on these papers, PULP & PAPER invited a paper engineer in one of the leading companies of the industry, George L. Swallow, to write his review and his views. The paper and the discussions which he reviews were *his own selections* from the Savannah program.

Born in Indiana, raised in New Jersey, he graduated from Cornell University in New York in 1943. He worked with the inventor, Carl Norden, on the famous Norden bombsight—one of the top secret sof World War II. Later he was a radio technician in naval service in the war. With the war over, he joined the staff of one of the big Southern Kraft mills, where he is paper mill engineer.



Relation of Brightness to Available Chlorine Added in Single Stage Hypochlorite Bleaching of Several Sulphate Pulps



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242	Production and Use of Unsettled Bleach Liquor
243	Procedures and Brightness Grades in Bleaching Sulfate Pulps

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(REVIEW—Cont. from Page 64)

Safety and Heat Losses

How safely dryers were designed for high pressure operation was asked. The dryers are designed with a ten to one safety factor. Heads, which present a special problem in that complete, accurate stress analyses cannot be made, are tested to destruction each time a new design is used. They must test to at least five times operating pressure to be accepted.

It was asked what was being done to prevent heat loss from dryer heads. The heads can be and are sometimes insulated to avoid this loss. It was noted, however, that heat losses from the heads in contact with air are small by comparison to the heat conducted through the shell to the paper, and the heat thus used in increasing the surrounding air temperature was not all loss as this same air passed through the hood and dried paper while doing so.

Case hardening of certain types of sheets is experienced when they are dried at too high a temperature. This condition is characterized by a hard, dry outside layer on the sheet with undried paper in the center. Paper or board in this condition will not dry properly and the condition must be avoided entirely. It was reported by one member of the group that on cylinder board using a mixed furnish, including newsprint, that up to 125# steam was being used in the last dryer section without any trouble from case hardening or other effects.

Plotting Sheet Temperature

The need for more study of sheet temperature as it passes through the dryers was discussed by the group. It was felt that absence of this type of data was a handicap in the study of the whole drying problem.

One speaker said his mill had made a stride towards solving this problem on a slow speed cylinder machine making heavy board, by imbedding a thermocouple in the sheet as it was formed at the wet end and noting temperatures throughout the run through the dryers. He was able in this way to plot sheet temperature, dryer by dryer, from one end to the other of his dryer section.

An interesting question was raised concerning the relative drying effect of a pound of steam in the dryers compared with a pound of steam supplied to heat air to the dryer felts, Grewin System, etc. No one could give an answer but it was felt that an investigation covering the subject would be helpful in realizing the optimum in drying.

VENTILATION

The subject of ventilation for comfort cooling was appropriately and ably discussed by L. G. Jannett, J. O. Ross Engineering Corp.

To help attack the problem of comfort cooling, standards have been set up by a committee of the American Public Health Association which give an index of temperature conditions which are comfortable, safe but uncomfortable, and unsafe. These standards are based on an "effective temperature" which is an artificial composite temperature based on dry bulb temperature, wet bulb temperature, air velocity, and radiation factors. Study of paper mill conditions shows that temperatures generally fall in the "safe but uncomfortable" class. Paper mill temperatures can be said to fall about midway between those of the "hot" industries such as underground mining, steel, and aluminum and those of standard industries where heat is no problem.

To achieve greater comfort in the paper mill, any or all of the component factors which make up the "effective temperature" can be adjusted by various means.

At the wet end of the machine room relative humidity, or wet bulb temperature is the offending factor. The degree of the problem here depends greatly on the temperature carried in the wire pit. Up to 110°F a relatively minor problem is presented, but as wire pit temperatures are increased to the range of from 110°F to 140°F, greater effort must be exerted to avoid exceedingly uncomfortable conditions. Exhaust fans of high capacity installed over the Fourdrinier help keep hot, moist air away from the rest of the machine room. A vapor-collecting hood has been used in front of and behind the Fourdrinier and has proved to be effective.

Farther down the machine in the dryer section, dry bulb temperature becomes dominant in creating uncomfortable conditions. An adequate hood exhaust system, besides being essential to good dryer efficiency will go a long way toward making this part of the machine room more comfortable. Other expedients which have been successfully used have been an insulated, totally enclosed hood around the dryer section, and exhaust fans to remove air from the uppermost regions of the machine room to relieve the stratification and resulting high temperatures near the roof. This last method should be used sparingly to avoid working against the draft created by the hood exhaust fans.

Totally Enclosed Hoods

Discussion following Mr. Janett's paper revealed that the totally enclosed hood around the dryer section had shown a 10% saving in steam consumption in the dryers and had been very helpful in establishing comfortable temperatures in the machine room. It presented obvious operational disadvantages, however, and was later taken off the machine. It was felt by those discussing the matter that proper design of a hood of this type could be achieved and that it would then be a very useful and practical installation.

Throughout the mill are places where direct heat radiation is a large factor in contributing to uncomfortable conditions. Often, insulating the hot surfaces emitting this radiation will not only improve conditions for personnel, but will conserve valuable heat and represent a saving in fuel. When this is not practical, shielding the direct radiation from areas where men are working will help.

When all the various methods of obtaining better working conditions by conserving and directing heat are exhausted, there still remains the method of moving air expressly for comfort cooling purposes. This may be either simply moving the ambient air with large propeller type fans to create a draft to increase body cooling by evaporation, or in more extreme cases may involve bringing in outside air through a duct system to be discharged in the working areas requiring cooling. These "spot cooling" systems are becoming increasingly popular as production and temperatures increase and other cooling methods become inadequate.

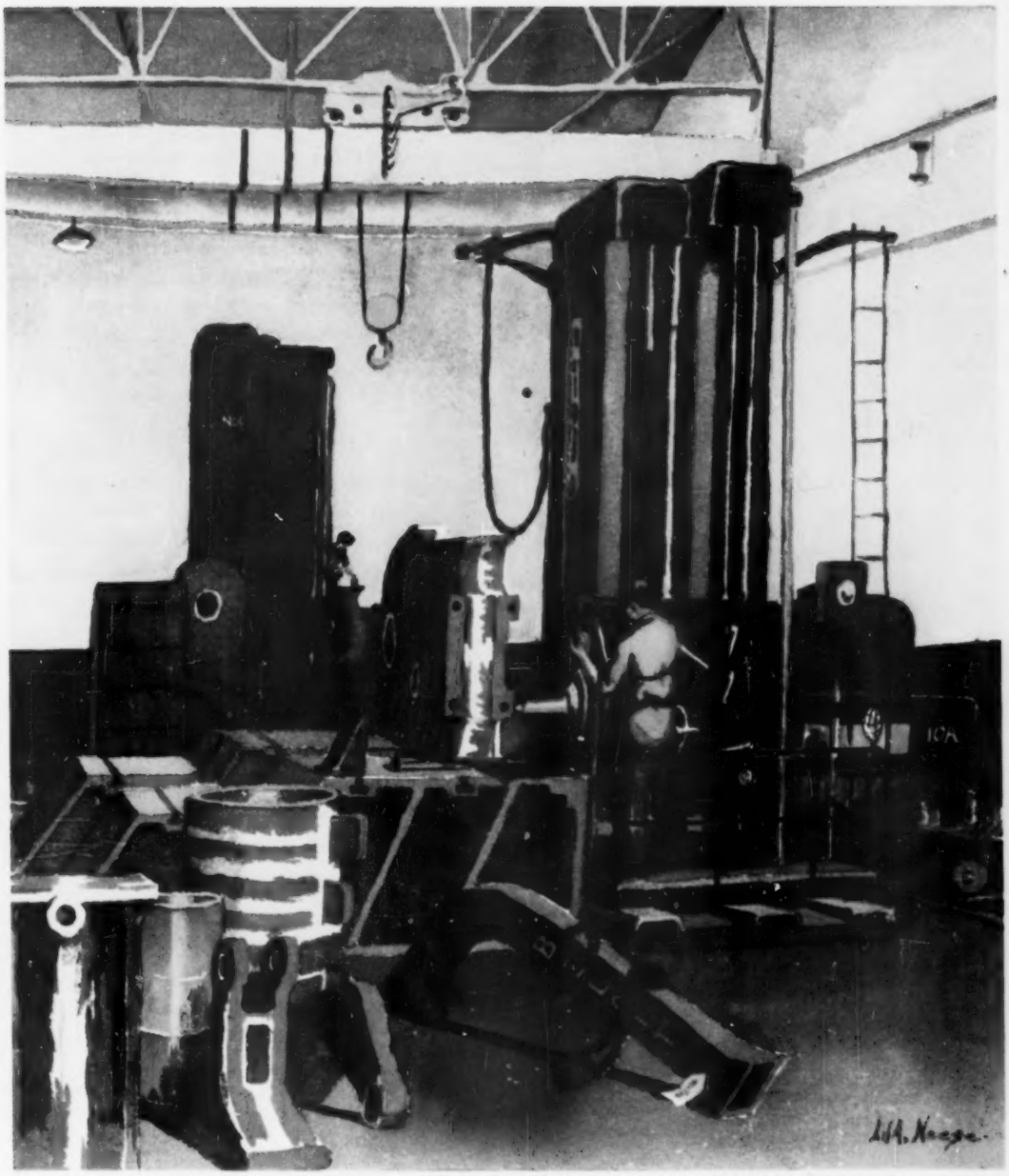
Finally the question of solar radiant heat was discussed. There is a trend of thought that windows and skylights serve no useful purpose in a paper mill, since ventilation should be forced, and not thrown out of balance by indiscriminate natural drafts, and because, as a twenty-four hour a day industry, lighting must be installed which is adequate at all times. Thus glass surfaces merely become heat traps, adding to the already difficult problem of reducing ambient mill temperatures.

AIR AND WATER REMOVAL AT WET END

A lively discussion from both the panel and the floor on the subject of air and water removal resolved itself primarily into a discussion of flat boxes, couch and press suction boxes and vacuum measurement. It was led by C. L. Clark, of Clark & Vicaria Co. The experiences related covering suction box operation seemed to point up the old paper mill problem of insufficient basic data to reconcile the various observed facts into a unified whole. Changes in suction box area, together with the resultant variations in vacuum and air flow per unit area were described by several persons. Results, under apparently similar conditions, were often directly opposite. Some interesting and useful work has been done in this line, but cause and effect are not well enough defined to predict results in another installation. It can only be said that experiment on the part of other mills may result in obtaining better water removal at the couch and presses by finding a better box size or position, or more suitable vacuum pump capacity.

The problems of water separation and vacuum measurement in the flat boxes were of interest to many. One of the chief improvements resulting in better flat box efficiency is the use of deeper boxes, permitting a uniform vacuum across the entire box. Frequently, in older Fourdriniers, the flat boxes are shallow and run continually flooded, blocking the box from the vacuum header.

Because of the water effects in the boxes, the vacuum indicated varies greatly with the location of the gauge. The end of the box at the tending side of the machine is believed to be the most representative location, but those present felt that no gauge was manufactured which will stand up for any length of time in that position. (We hope some gauge builder can refute this.) Lacking any satisfactory gauge, some mills have installed mercury monometers which have been very helpful in checking flat box operation.



WATER COLOR PAINTING BY L. J. A. NEESE

QUALITY MACHINING at Beloit Iron Works, Beloit, Wisconsin—part of the process of building high-speed, high-production paper machines. Huge horizontal boring, drilling and milling machines shown above are among the many types used in specialized operations. Precision equipment, skilled operators, trained inspectors help to hold close tolerances on every part.

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2. **Decreasing to the point of a "closed system" status the use of fresh water.**
3. **Simplifying and controlling any slime and odor problem due to micro-organism action.**
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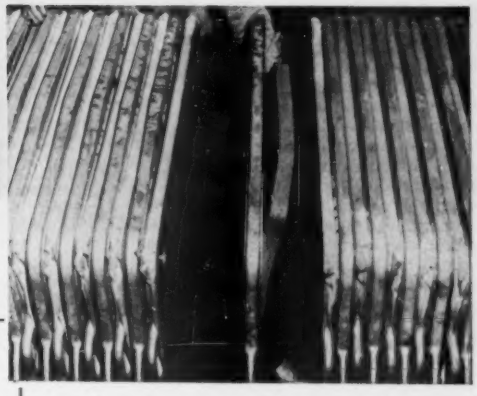

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STABILIZATION OF DOUGLAS FIR —

KRAFT BLACK LIQUOR

By Gerritt G. DeHaas
Research Chemist, Pulp Div., Weyerhaeuser Tbr. Co., Longview, Wash.

A Successful Large Mill Scale Tower

This article, especially prepared for PULP & PAPER readers by the author, Gerritt G. DeHaas, Dutch-born research chemist with Weyerhaeuser (shown in picture), deals with one of the paramount problems today of the kraft industry everywhere.

This article relates how Weyerhaeuser is successfully operating a large *mill scale* tower at its Springfield, Ore., mill. The procedure is of interest in that it provides a means of savings in sulfur and achieving a material reduction in odor.

It is a fitting sequel to the exclusive article which PULP & PAPER published in its Feb. 1951 issue on the use of the first Bergstrom tower in America at the Springfield, Ore., kraft mill of Weyerhaeuser Timber Co. That article, by Dr. D. E. Allen, project chemist at Springfield, told how stream pollution was effectively reduced to eliminate toxic compounds which might affect fish life. Now, this article relates how Weyerhaeuser has gone a step farther in devlopment of effective measures for reducing odors.

Foaming difficulties have frequently been serious in this type of operation, as was experienced in pioneering work in Southeast United States and some other kraft mills. Weyerhaeuser's Pulp Division has overcome this difficulty by use of properly regulated concurrent flows of liquor and air.

The so-called Cascade test, which is described in this paper, is a useful tool for the study of sulfur compounds in waste liquor operation.

As stated above, the author was born and raised in Holland. He did graduate work in Zurich, Switzerland. When Hitler invaded the Low Countries, he fled from Holland to Britain. He did considerable work in London on hydrolysis of wood for sugar and alcohol, before moving on to new opportunity in America.

In Weyerhaeuser now he works under Howard Morgan, Pulp Division manager, and Harold Bialkowsky, his immediate chief, who is research director of the Pulp Division.

The problems of kraft mill odors and atmospheric pollution from such mills are becoming increasingly important, both from the standpoint of mill economies and public welfare.

The main sources of odors are the digester relief and blow gases, the vents from the evaporators, and the furnace stack. Organic sulfur compounds such as methyl mercaptan and di-methyl sulfide are produced as side reactions during the latter part of the pulping operations. The fugacity of both of these sulfur compounds is extremely great, with the result that these compounds are volatilized almost completely during digester relief and blow and during the initial phases of subsequent evaporation. The recovery furnaces, coupled with direct contact evaporators, are the primary source of hydrogen sulfide with relatively small amounts of organic sulfur compounds which eventually pass up the stack. On a weight basis the hydrogen sulfide losses are of much greater magnitude than the organic sulfur compound losses from digestion.

The present paper describes work on the oxidation of black liquor and reports on the effect of this oxidation of the hydrogen sulfide losses. In these general operations the digesters are heated indirectly with forced circulation and the digester contents blown into a large blow tank. The pulp is washed in the 3-stage set of counter-current washers and the black liquor evaporated in the multiple effect evaporators. The black liquor then passes through a direct contact evaporator of the Cascade type where the liquor is further concentrated by the action of the hot flue gases of the recovery furnace.

With the direct contact evaporation of black liquors containing residual sulfide, acid gases such as carbon dioxide and sulfur dioxide will be absorbed in the alkaline black liquor and displace and liberate hydrogen sulfide as a gas. The purpose of the stabilization treatment by oxidation is to convert the residual sulfide to some more stable form of sulfur so that liberation and loss cannot occur. As Tomlinson and other workers have shown, the residual sulfide ions in the black liquor can be removed by a treatment with air, usually in some form of a tower. In applying this principle in practice, much difficulty has been encountered due to foaming troubles.

LABORATORY STUDIES

As indicated above, the liquors used in these studies originated from the plulping of Douglas fir, and they normally contain 3 to 5 gms.—lt. of residual sulfide. The residual sulfide concentration was determined by the potentiometric method employing a silver-silver sulfide electrode and an alkaline resistant glass electrode.

A number of different types of laboratory towers were investigated, usually made of stainless steel, approximately 4 in. in diameter and 6 to 8 feet high. These towers were packed with ¼ in. to ½ in. Raschig rings. With this type of laboratory tower foaming difficulties were encountered and it was also difficult to obtain an accurate figure on the surface area required to oxidize a unit amount of sulfide ion.

A glass laboratory tower was then erected so that visual observations could be made on the tower operations. The tower consisted essentially of two 18 ft. long concentric glass tubes. The inner tube was enclosed in a water jacket to establish constant temperature conditions. The air and liquor were passed through the tower at pre-determined rates and the black liquor flowed continuously along the inner wall of the inner tube. The air entering the tower was preheated and humidified by bubbling through the water in the water jacket. The air flowing concurrently with the liquid was taken off at the side of the bottom of the tower, and measured by a gas meter. By this arrangement splashing and bubbling were prevented completely, no foam was developed, and it was possible to observe that at all times the effective surface was completely wetted.

The results of these tests showed that in order to arrive at complete sulfide ion removal, under normal conditions, 1000 sq. ft. of packing surface will handle 10 pounds of sulfide ion per hour and at 3 gms. per liter the liquid flow should be 400 gallons per hour per 1000 sq. feet with a gas flow of 10,000 cu. ft. per hour. At this stage of the investigation the process was considered to be sufficiently well established to be advanced to the pilot plant stage. The laboratory experiments showed that excessive foaming of the black liquor could be prevented. It seemed, however, to be of interest to carry out some laboratory tests which would indicate the degree of stabilization toward direct contact evaporation.

A laboratory Cascade test was developed wherein a small amount of black liquor was treated with nitrogen gases containing either sulfur dioxide or carbon dioxide. The apparatus consisted essentially of a gas heater, a wide glass tube containing the black liquor, effluent gas cooler, and glass wash bottles for collecting hydrogen sulfide stripped from the black liquor. Sodium bicarbonate was added to the black liquor in order to achieve a maximum conversion of the sulfides to hydrogen sulfide. A gas stream of nitrogen and carbon dioxide preheated to 300°C. was passed over the black liquor.

The results indicated that the hydrogen sulfide development is eliminated as long as the temperature does not exceed the boiling point of water. When the temperature increases to around 250°C. some hydrogen sulfide is split off from the black liquor in spite of the fact that the black liquor did not contain any residual sodium sulfide. A reduction of the hydrogen sul-

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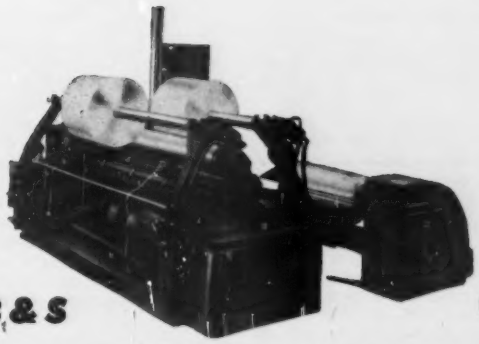

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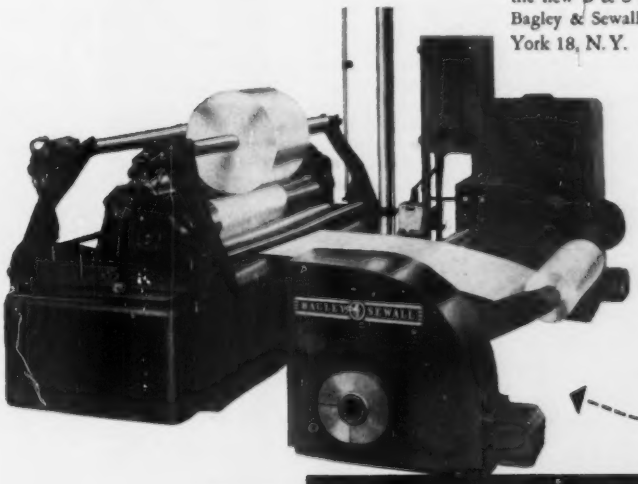
For full details on the Shaftless Backstand and the new B & S Slitters and Rewinders, write to The Bagley & Sewall Company, 500 Fifth Avenue, New York 18, N. Y.



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fide losses can be expected as far as the direct contact evaporation is concerned.

PILOT PLANT INVESTIGATIONS

The stainless steel pilot plant tower was packed with 3 in. cross partition rings having a total effective surface of 5750 sq. ft.

Stabilization efficiencies similar to the small tower were obtained. The efficiency was 97 per cent with a black liquor flow of 29.9 gal./min. with an oxidation of 3.2 gms. of sodium sulfide per liter.

MILL SCALE TESTS

A plant size tower was then erected. The tower was 10 ft. in diameter and 30 feet high and packed with 22 feet of 4 in. cross partition rings. The air was forced into the tower at the top and passed out at a vent line from the sump at the bottom of the tower.

The plant where the mill scale tower was erected normally operated with a sulfidity of 16 per cent and in order to maintain the sulfidity, it was customary to add approximately 3000 lbs. of elemental sulfur per day to the digesters for the production of 170 tons of pulp per day. As the oxidation tests progressed it was possible to completely eliminate the addition of elemental sulfur to the digester and the sulfidity of the cooking liquor increased from 16 per cent to around 20 per cent. No foaming difficulties were encountered and it was possible to attain complete oxidation of the liquor with an average flow rate of around 295 gallons per minute.

Recently the production of this plant has been increased to 250 tons per day and a larger tower was installed. This tower is operating very satisfactorily.

To check the action of the Cascade evaporators on the stabilized liquor, flue gas analyses were made after the furnace and after the Cascade evaporators. From the second day until the 8th day the average hydrogen sulfide of the gas after the furnace and after the Cascade evaporators was 0.390 mg/lt. and 0.389 mg/lt. respectively compared with 0.5 mg/lt. and 1.0 mg/lt. under normal conditions. These data show a significant reduction of the hydrogen sulfide losses as far as the Cascade evaporator is concerned.

Every effort was made to reduce foaming tendencies to a minimum. The distribution of the liquor in the tower was such as to obtain good wetting with a minimum of splashing and the liquor and air were passed through the tower in the same direction.

The stabilization of the black liquor resulted in a marked reduction in air pollution, which was readily noticeable in the area surrounding the plant. However, the mill is not odor free since this treatmnt does not effect a reduction or elimination of the mercaptans and organic sulfur compounds originating from the digester relief and blow.

Doubles Plant

National Container Corp., corrugated box plant at Chicago has doubled its floor space to 135,000 sq. ft. for storage of raw material, manufacturing area and storage for finished goods.

MACMILLAN-BLOEDEL MERGER

Total Assets Represent Over $103,000,000; Is Largest Forest Industry in British Empire

Integration of personnel as well as physical properties such as standing timber, logging camps, pulp mills, sawmills and other processing plants was one of the problems confronting the H. R. MacMillan Export Co. and Bloedel, Stewart & Welch organizations as a result of their merger of assets, representing a total of more than $103 millions. However, most of these matters have now been settled, and final clearance for the merger was obtained when the Canadian government authorized issuance of supplementary letters patent covering essential corporate changes.

First session of the new board was held in Vancouver, B.C., Oct. 30 in the Metropolitan Building where, in 1919, H. R. MacMillan and W. J. Van Dusen, who had previously worked together in the provincial forest service, set up the company that was eventually to be one of the most important factors in the forest industry.

The October meeting was a historic one not only because it formally marked the amalgamation of the MacMillan and Bloedel companies but because so many of the pioneering principals of both companies were active participants in the merger arrangements, including J. H. Bloedel, 87, former chairman of the board of the Bloedel organization; Prentice Bloedel, former president; S. G. Smith and Bruce M. Farris, vice presidents, and senior executives of the MacMillan organization.

The real veteran of the group, of course, was J. H. Bloedel, who had gone west in '89 as a young university-trained engineer to stake his claim in the timberlands of the coast. He joined with J. J. Donovan and they operated with bull teams near Bellingham, and later he formed a successful partnership with Patrick Welch and General J. W. Stewart to form the timber empire in British Columbia bearing their names.

Chairman of the board of the new company, MacMillan & Bloedel, Ltd., is H. R. MacMillan, founder of the organization which became the largest integrated forest enterprise in the British commonwealth. Vice-chairmen are Prentice Bloedel and W. J. Van Dusen. President is B. M. Hoffmeister, one of Canada's distinguished military leaders in World War II who has been serving as president of the MacMillan company.

Vice-presidents are: S. G. Smith, one of the foremost authorities on logging in the Northwest; Ralph M. Shaw, who was vice-president in charge of sales for MacMillan; Bruce M. Farris, for many years in charge of the Bloedel manufacturing and selling; Harry Berryman, recently general manager of production for MacMillan; R. S. Laird, formerly head of the Bloedel sales staff who will now be in charge of pulp sales and raw material supplies; G. D. Eccott, who continues as secretary; Clifford Crispin, who has been manager of MacMillan pulp division.

A. A. Kennedy, formerly secretary-treasurer for Bloedel, is now treasurer of the consolidated company, and R. D. MacFayden continues as assistant secretary. Directors are: E. B. Ballentine, D. A. Baxter, H. S. Berryman, J. H. Bloedel, Prentice Bloedel, J. M. Buchanan, Mark Collins, C. Crispin, Douglas Dewar, G. D. Eccott, Gordon Farrell, B. M. Farris, A. E. Grauer, B. M. Hoffmeister, G. F. Laing, R. S. Laird, John Lecky, H. R. MacMillan, Evan S. McCord, R. D. Merrill, H. T. Mitchell, H. G. Munro, L. R. Scott, R. M. Shaw, S. G. Smith, W. J. Van Dusen, H. H. Wallace, Fred Wilson, A. H. Williamson, Hon. W. C. Woodward.

SEMTILE AND SEMPLATE MEN

ABOVE ARE VICE PRESIDENT ED TUCKER, (left) with ROBT. A. RICHTER, third generation of his family to represent Stebbins Engineering & Manufacturing Co., Watertown, N.Y. He is one of two sons of CARL F. RICHTER (left), Pres. of Stebbins. His grandfather also was Pres. of the firm. Young Richter, a Clarkson College graduate, has been in Stebbins sales for a year and a half. He went to Savannah Engineering Conference with Mr. Tucker.

HEPPENSTALL EXECUTIVES

HARRY O. LANG (left), from Detroit office, moves to Pittsburgh as Vice Pres. in charge of Sales, Heppenstall Co., and GEO. H. WURSTER (right), was named Eastern Sales Mgr. in Boston, where he has been Sales Rep. These were among changes that involved JOHN P. ROCHE, Vice Pres. for Sales being promoted to Exec. V. P., according to Pres. R. S. HEPPENSTALL. RAY PORTER, Eastern Sales Mgr., moved to Detroit to succeed Mr. Lang as V. P. of subsidiary company.

these

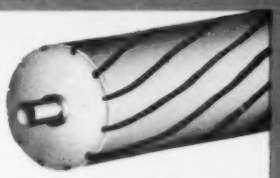
Clark-Aiken

"Firsts" Slash Sheeting Costs . . .

Clark-Aiken engineers went "all-out" in designing the new, complete line of Clark-Aiken Cutter-Layboy Units to get sheeting costs down to rock bottom.

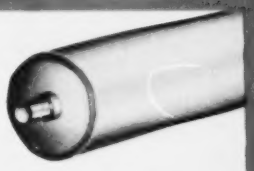
All long-popular, cost-cutting, quality-improving Clark-Aiken features have been retained — adjustable lead-in rolls to remove wrinkles in the sheet, infinite sheet length range accurately maintained, infinite paper travel speed, ball-bearing shearing type slitters, adjustable-speed take off tapes to prevent tearing (on most models) and the exclusive self-sharpening scissors-action Clark-Aiken "Spiral Shear" cylinder knife that cuts clean, sharp edges on any stock. In addition, the new features illustrated have been added to further increase their all-around operating efficiency, economy and accuracy.

With a choice of conventional, overhanging-type or Vickery-type layboy, there's a Clark-Aiken Cutter-Layboy Unit *exactly* suited to your sheeting job. Write for bulletins. The Clark-Aiken Company, Lee, Massachusetts.



Oversize Pinch Rolls for More Positive Grip

Up to 18% more gripping surface for positive feed.

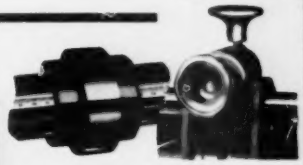


Larger, Sand-Blasted Draw Rolls — Prevent Slippage

Greater gripping surface—non-slip action.

Lifetime Tapes End Tape Troubles

Wear indefinitely; stretch less; eliminate shutdowns.



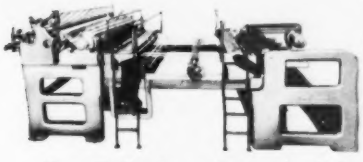
Scale-Set Slitters and Joggers for Perfect Alignment

Sheet accurately aligned without use of measuring tape.

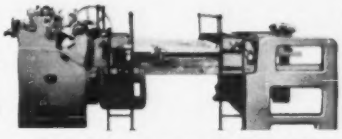
Unit Construction for Smooth Operation, Less Broke at High Speeds

Cutter, delivery, layboy co-ordinated for unit operation. Heavy cast frames, anti-friction bearings throughout for sustained accuracy at high speeds.

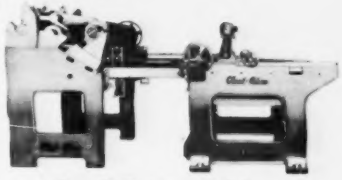
The Complete Line — *a unit exactly suited to your sheeting job*



Type H Simplex or Duplex for high speed, heavy duty work. 76" — 220" Conventional, overhanging or Vickery delivery.



Type C for extreme accuracy. 76" — 124" Conventional, overhanging or Vickery-type layboy, with or without overlapping delivery.

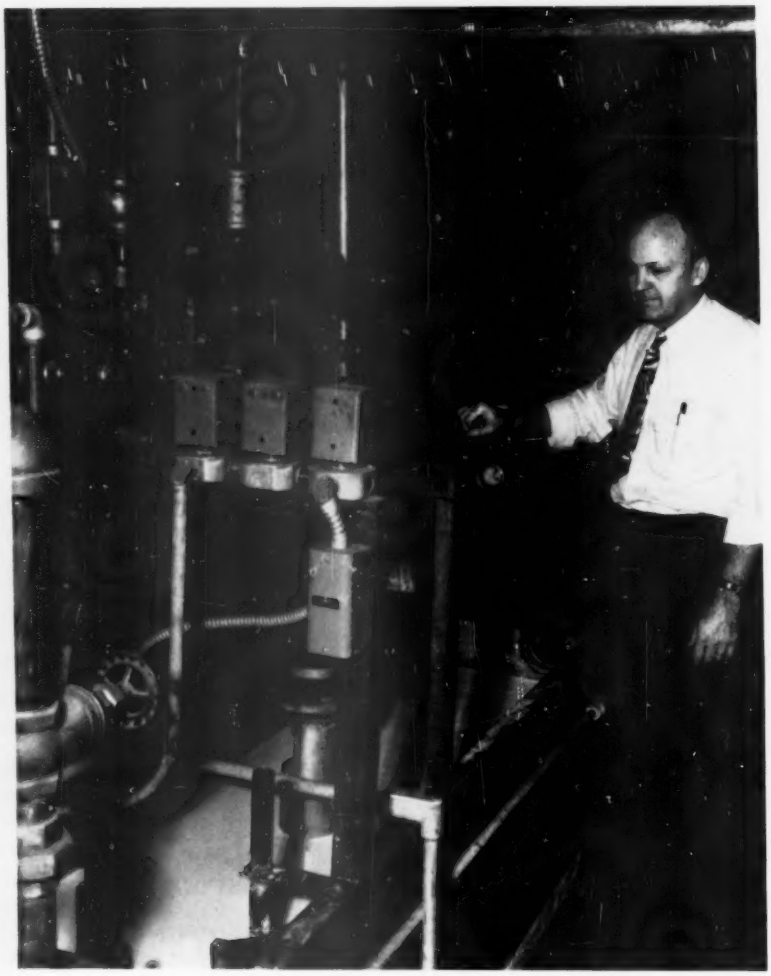


Type D Economy Unit for finishing room service. 36" —100".

QUALITY CONTROL IN
Chemical Formulation

By Lester H. La Liberte

Paper Mill Supt., Kalamazoo Vegetable Parchment Co.



LES La LIBERTE, author of this article, is shown checking filters on paper machine, ahead of size press. Mr. La Liberte is Mill 2 Supt. at KVP, in Parchment, Mich. He belongs to a well-known papermaking family. Brother Reuben is with Kimberly-Clark, Niagara, Wis., and their father, who died a year ago, was at same mill.

It has often been said that the materials that go into a sheet of paper have to be prepared just as carefully as those that go into the recipe for your family's favorite cake. Just as too much, or not quite enough, of a certain substance spoils the cake, so can such improper preparation of the many materials that go into our paper ruin the sheet. There is no leeway for guesswork.

This is the credo that forms the basis of quality control during all points of paper manufacture and converting at the Kalamazoo Vegetable Parchment Co., Parchment, Mich. Strict product control is especially important in KVP's operations because of the considerable amount of tonnage consumed by the food industry, where sanitation is law.

One of the most recent steps in the control of KVP papers *as they are being made* on the paper machines was the installation of a Chemical Formulation Section in the machine room area.

Although much of a paper's characteristics are predetermined in the beater room and by the machine crew's operations there remains, on the paper machine itself, much to be done in the way of final refinement—such as the introduction of surface size, glue for fiber retention and materials for wet strength as specified on each order.

That is the job of the Chemical Formulation Section. Careful controlling of the formulation and flow of these materials to the machines adds up to a uniform sheet of paper from one end of the order to the other.

To reach this uniformity requires accurate mixing of ingredients and control of their supply to the machines, constant vigilance to insure that standards are met throughout the run, and close liaison between the Chemical Formulation Section and the machine rooms.

Three Contributing Factors

Three factors contribute considerably to the point by point control of quality in formulating and supplying chemicals to the machines as practiced at KVP:

(1) The overseeing and coordinating of these activities by a full-time technical man, who works closely with machine room supervision in working out formulations for each machine order and follows up his preparations with a continual testing program to insure that standard is met throughout the run.

(2) The installation of new automatic equipment to facilitate easier, speedier and more accurate supply of ingredients to the machines.

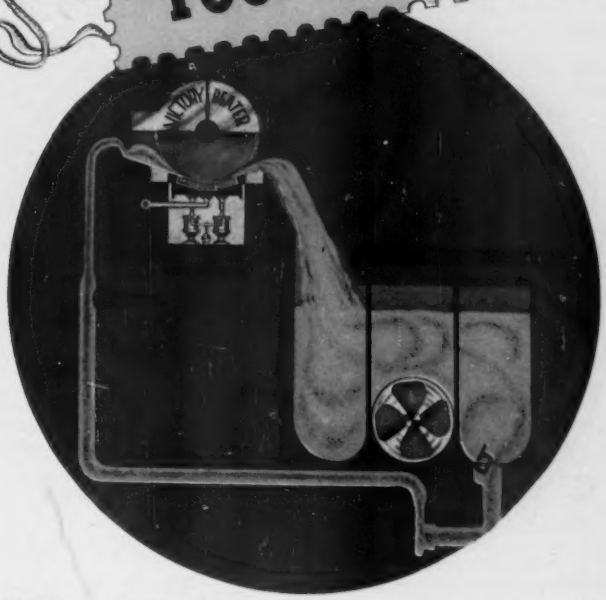
(3) Because of this new equipment, the Chemical Formulation operators can supply materials with correspondingly greater ease and efficiency.

A laboratory with testing equipment is provided in the formulating office. The technical man makes frequent checks upstairs on the machine runs and double checks his findings with those of the paper tester.

Flow of Chem. Formulation

The bulk of the section's work is to supply tub size to the machines. Most papers made by KVP require some type of tub sizing treatment to improve the sheet for pen and ink work or printing, or to offer special characteristics such as those needed in locker and market papers. The size is mixed, according to the formula required, in either of two cookers in the

Tailored to fit YOUR PLANT



EXCLUSIVE FEATURES OF THE VICTORY BEATER

1. *Controlled Flow — uniform, positive fibrillation*
2. *Pressurized bedplates*
3. *Absolute control up to 40 tons bedplate pressures*
4. *Centralized bedplates assure 100% roll-bedplate contact*
5. *Highest effective inch cut potential*
6. *Horizontal roll oscillation makes bars self-honing*
7. *Lowest maintenance cost*
8. *Tailored-to-your-plant, low-cost installation*
9. *Spherical anti-friction roller bearings*
10. *1000 gallons per minute capacity*
11. *Highest quality, high tonnage production*
12. *All-time record for continuous production!*

*VICTORY BEATERS are made in two styles: (a) **Single Roll** units for handling batches as small as 500 pounds. (b) **Multi-Roll** units with two, three or more rolls for treating 100, 150, 200 or more tons per day on a continuous production basis.*

Investigation of the versatile record-breaking VICTORY BEATER is a *must*! Write, wire or phone today for Booklet PP 1251.

NO MATTER what your physical plant limitations, stock treating and production requirements may be, the *Controlled Flow* VICTORY BEATER* is "tailored" to meet them better than any similar refining equipment in the world!

Unique, out-of-tub design permits low cost installation below, above or on same level with tubs and holding chests. One, two, three or more rolls may be quickly installed *without costly plant alterations*, to produce any desired fibre treatment on a high quality, high tonnage, basis.

*Patents issued and pending.

THE NOBLE & WOOD MACHINE CO.

Paper Mill Machinery

HOOSICK FALLS • NEW YORK • U.S.A.

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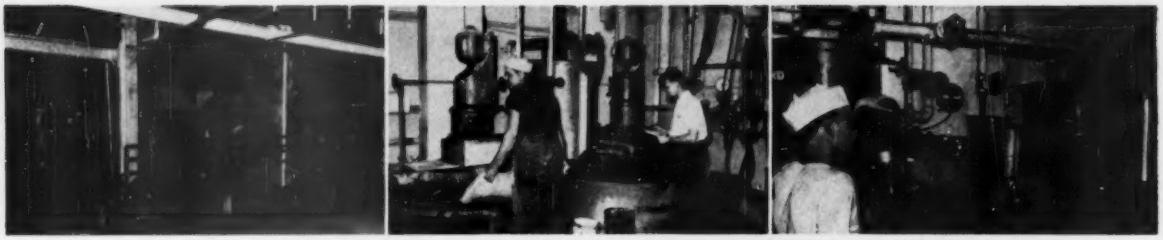
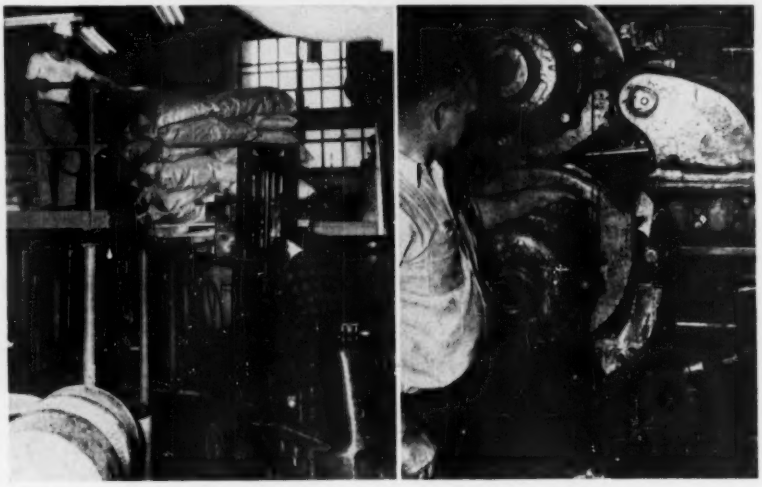


VIEWS AT KVP MILL, PARCHMENT, MICHIGAN:

Left: Storage Tanks—Tub size for two large paper machines is stored in this battery of interconnected stainless steel tanks. Center: Cooking tanks and mixers at KVP. Here the various sizing ingredients are scientifically mixed and pumped to the storage tanks. Right: Mixing glue in chemical formulation section. This material is used on the paper machines to offer good filler retention.



Left: Delivering sizing material to the mixers at the KVP mill. Right: Backtender points to one of the showers at the size press on one of the KVP paper machines.

section, then pumped through a series of lines and tanks to the size press on the machine.

If the order requires wet strength, that material too is prepared in the section, as well as glue, which gives an improved retention of fillers.

Until last year the equipment to perform these operations was inconveniently scattered all over the machine room basement area. Now Chemical Formulation is centered in one section in the basement located between the two machine rooms. by redesigning the supply system, introducing new equipment and making provision for easier material handling, the new section has reduced waste, can make speedier and more accurate measurements and mixing of materials, and can produce cleaner furnishes, all with better control.

These improvements spell quality control in KVP's Chemical Formulation. Careful record keeping, more efficient preparation of formulas and the assignment of a laboratory man to the machine room technical program make it possible not only to make step by step control of quality, but to expand chemical formulation activities to develop more efficient application on actual paper machine runs.

GULF STATES MILL ADDITIONS

New high density storage capacity—125 tons for unbleached and 100 tons for bleached pulp stock—has been put into use by Gulf States Paper Corp., Tuscaloosa, Ala.

The mill has experienced much change since the close of World War II. Built in 1928, its 240-ton daily capacity has been brought up to 350-ton average with some days running the full 400 tons. Doubling of digester capacity through addition of four was effected. These eight digesters are unlined; the mill saying they have not experienced too much trouble from corrosion. Direct cook is used, with circulation for four digesters. Manual control is used, but instrumentation is being built up. Automatic gas-off has been under trial during the summer months.

The woodyard is under pulp mill superintendent jurisdiction, so he directs all outbound and inbound switching. The mill receives 700 cords of pulpwood daily, mostly by truck. Unloading and switching is effected with two American Hoist & Derrick diesel powered cranes, which also switch the cars.

Contrary to other Southern mill practice, the chips are blown to the digester bins instead of being moved by conveyor.

GULF STATES OFFICIALS (l to r): JACK WARNER, Executive Vice Pres.; W. G. (BILL) REYNOLDS, Production Mgr., and L. M. CHAMPAGNE, Asst. Prod. Mgr.

A rotary feeder is used. The operators watch the ammeter serving the blower system. If it climbs, they know the load is building up so they slow the chipping down.

Heavy black liquor goes at 70 degrees Baume to two sets of evaporators, one a Swenson and the other a quintuple effect composed of one Swenson originally a stand-by unit and four Goslin-Birminghams. From the evaporators the liquor moves at 26 Baume. The two 175 ton recovery boilers are Babcock & Wilcox.

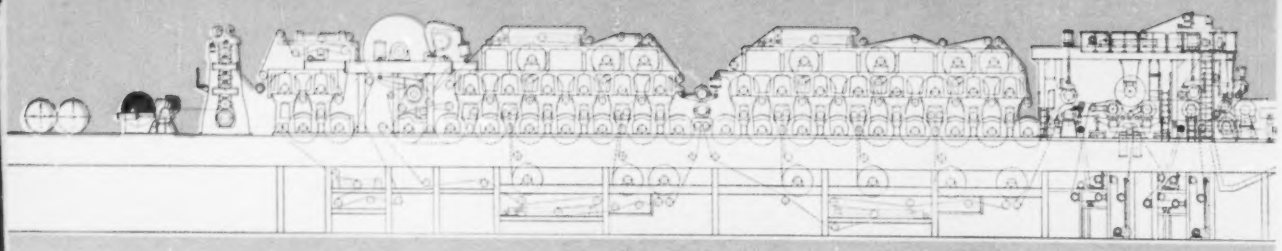
The program completion found the 3-stage bleach plant modified to 4-stage and its capacity increased to 100 tons daily. The screen room was revamped. Much of this equipment is Impco. Unbleached stock is passed through three 8x12 Impco pulp washers which afford a rapid operation. It then drops to the top screen room level to pass successively through three knotters, two Trimbeys, and six Impco rotary screens. Accepted stock goes to two deckers, thence to the new 125 ton capacity high density storage (12 per cent to 15 per cent consistency) from which it is fed to central storage and to refining. This storage operation utilizes a Bristol type consistency regulator and remote control flow regulator for delivery to central storage.

Stock for bleaching is cooked in four digesters, washed in 12 diffusers, then goes to screen room, passing through one or both of two knotters, dropping to a pair of Trimbeys and centrifugal screens. A flume lowers it to the third level on which are flat screens and a new Impco thickener. It goes to bleaching and high density storage.

The mill's postwar paper machine is a Beloit, which the company speaks of as having the first pressure headbox in the South.

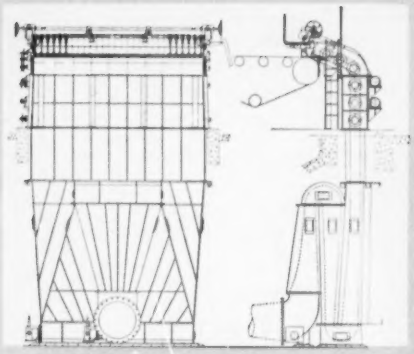
Designed for very heavy duty work in widths from 92" and up, Langston's "DA" Slitter and Winder produces top quality rolls at speeds up to 3500 feet per minute. Ask for Bulletin 204 describing other sizes.

SAMUEL M. LANGSTON COMPANY
CAMDEN, N.J.



MORE PAPER, *FASTER*

because the Design is Right



Higher speeds . . . greater production . . . minimum shut-down time . . . easier handling and operating facilities . . .

The improvements built into your Puseyjones Machine make the big difference in production and profits.

Take wire changing, for example. With improved "Rapi-drape" Wire Handling, including Hydra-motor for raising and lowering the breast roll, there is minimum production loss. In recent designs, the "Rapi-Drape" device has been further improved by combining the breast roll, doctor and forming board into a single raising and lowering unit, thereby providing more slack in the wire and reducing the wire changing time.

Whether your plans call for a completely new machine or the replacement of individual equipment, call in Puseyjones for the latest improvements in continuous, uniform, high-speed paper production.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Fabricators and Welders of all classes of Steel and Alloy Products
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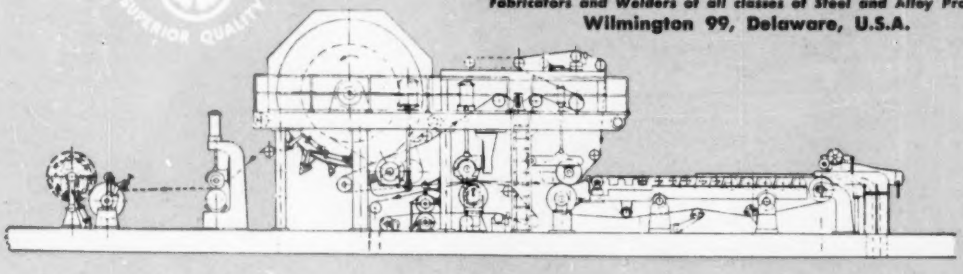
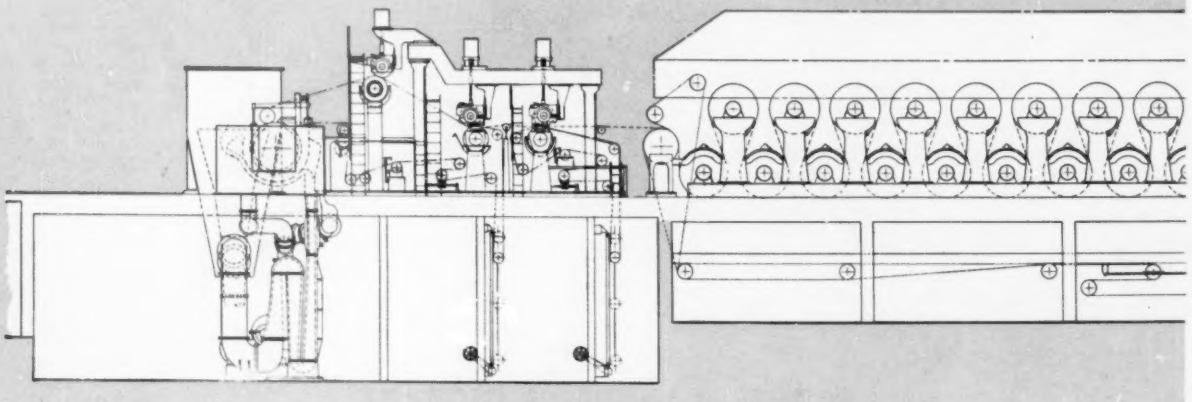




JACKSONVILLE REVIEW

NEW PROCESSES IN THE SOUTH

THEIR MILLS WERE HOSTS

WM. T. (BILL) WEBSTER, Gen. Mgr. of National Container Corp., on left, and GEO. A. BALKO, Resident Manager for Hudson Pulp & Paper Corp., Southern Division, on right, were top flight mill executives in Florida to welcome Supts. Their mills at Jax and Palatka, respectively, opened doors to touring delegates (Container Corp.—C. R. Hunsicker, Mgr.—did too). Both are busy with expansion, Mr. Webster planning new mill near Valdosta, Ga., and Mr. Balko, in completion of doubling of Palatka production with new high speed Puseyjones machine.
Mr. Webster moved South from the Pacific Coast kraft industry. He was also host at a dinner for delegates. Mr. Balko, New York born, started in Canada, moved South from Mead Corp. where he was Exec. Asst. to Operating V.P.

The program of the joint meeting, in Jacksonville, Fla., Oct. 10-12, of Southern and Southeastern superintendents, started at the papermaking end. E. J. Ward, Cameron Machine Co., reviewed slitting and winding; A. G. Hoss, Lindsay Wire Weaving Co., talked about various types of wear sustained by Fourdrinier wires; R. W. McCormick, National Container at Jacksonville, recounted experiences learning how to use nylon carrier rope. Splicing —one difficulty—was solved when a cigarette ash dropped on an end of pieces taken into the office for splicing practice. The fiber ends fused and the splice held. Tightening from heating was overcome through experience. Nylon had been used two years, with down-time for splicing cut to four hours the second year, or about 1/6 normal. Down time reduction and long wearing qualities were said more than offsetting higher cost of nylon.

Today, unlike ten years ago, the paper mill need not fear difficulties from crude rubber being cut off, according to James E. Post, Raybestos-Manhattan, Inc., who said the synthetic product adapted to roll covering in some cases performs a superior service. He recounted what rubber is used on what rolls; reviewed operation and maintenance problems.

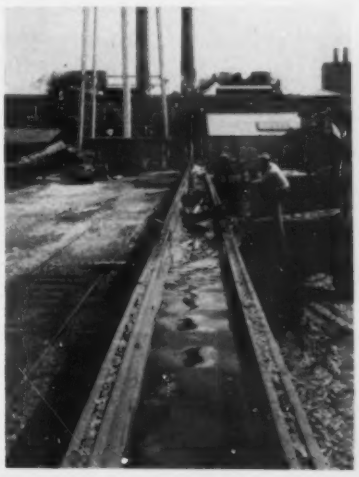
Following this article we print his 10 point program for proper care of rolls.

A paper by Fred W. Bishop, Southland Paper Mills, on 4-stage kraft bleaching (delivered by Jesse C. Bradbury) discussed all phases including pH, temperature, etc., and wound up in general discussion touching on stream quality control.

TWO NEW CHAIRMEN

JOHN J. (JACK) THOMPSON (left), new Chairman of Southern Division of the Supts. Assn., and CECIL B. CURRY (right), new Chairman of Southeastern Division. Mr. Thompson is Pulp Mill Supt., Southland Paper Mills, was born in Gilmer, Tex., has had 26 yrs. in mills, starting at Bastrop, La., and went to Lufkin, Tex., from St. Mary's.
Mr. Curry, born in what is now an ex-sawmill ghost town, Lanesville, West Va., got his industrial engineering degree in night school while working at Sylva, N.C., married Eloise Crawford, whose father is cook at Sylva; now Mr. Curry is Pulp Supt. for Nat. Container at Big Island, Va.

PAPER ON THIS FLUME



D. J. BRETT Jr, Personnel Mgr., National Container at Jacksonvile, took this picture for PULP & PAPER to illustrate unusual, above-ground steel flume recently installed at that mill. M. J. FARRIS gave a paper before the Supts. Convention, describing the flume, believed only one in South. In May 1949, PULP & PAPER a report on Baie Comeau, Que., told of 26 miles of gravity-flow wooden flumes used there to bring 4 ft. wood to the mill—Average drop 3 ft. a 1000 ft., some places it is 40 ft. high and once place crosses a 350 ft. bridge.

McCARTHY MEETS McCARTHY

TWO OF PAPER INDUSTRY'S best-known McCarthys met for the first time at the Holly-Edwards Co.'s dinner party one of the evenings in Jacksonville, Fla.
Just after they were introduced, they posed here for PULP & PAPER before American flag: JUSTIN McCARTHY (on left), moved recently to Jacksonville, Fla., from Tacoma, Wash. He is Chief Engineer for St. Regis in building modern new paper mill on a point just north of "JAX" on the St. John River.
CHARLES McCARTHY (on right), is based at Savannah, Ga., where he is Plant Mgr. of three-year-old modern high speed Southern Paperboard Corp. (Robt. Gair) mill. The McCarthys got together again a week later at the Engineers Conference in Savannah.

Use of Pine Groundwood

Combination of groundwood with kraft board will provide a competitive product with many advantages, according to a study made jointly by John L. McCullough, Southland board mill superintendent, and Jesse Bradbury. Grinding of pine groundwood yielded one air dry ton of #1 quality from 0.9 of a 128 cubic foot cord of rough wood. In an integrated mill, groundwood would cost 60% of unbleached or 40% of bleached kraft pulp (kraft yield may range 1.5 to 1.7 cords per ton), they said.

Advantages in substitution of groundwood for part kraft in material for food trays and containers now made from high test board where the inherent strength is not utilized: (1) More yardage of board per ton purchased by the converter; (2) converter can run groundwood-filled sheet faster as it can absorb glue on laminator rapidly; (3) better color appearance than when waste news is used as filler; (4) lower cost; (5) improved printability.

W. H. Tock, Allis Chalmers Mfg Co., reviewed operation and maintenance of lime sludge kilns, in line with his discussions previously reported in PULP & PAPER.

Pulpwood Flume—A Picture

M. J. Farris, National Container, Jack-

Co., a D. J. Murray Mfg. Co. affiliate, was described by C. L. Durkee, who said two units are in actual production but technical data is as yet incomplete. Chips are fed into the digester by rotary valves with volume pre-determined. The liquor is also metered in, with arrangements for either direct or indirect cook. Chips are moved fully submerged in compartments by a chain with a general effect similar to a series of small digesters. Wear on the conveying chain is not critical. Washing is effected with minimum residual liquor. Cooking involves minimum labor; better control. Liquor and chips are discharged separately. Higher grades can be made as well as the 9-point produced at present. Smaller installation space is needed.

Interest was manifested during a semi-chemical pulping talk by Sidney D. Wells, Institute of Paper Chemistry, Appleton, Wis., and a subsequent free-for-all discussion monitored by Leonard Growden, Mead Corp.'s operating supervisor of board mills. Starting with 9-point from spent chestnut tannin extraction chips, the current phase has now gone into a "no limit range" of hardwoods. The pulp capable of being produced can be bleached for printing and specialty papers, with economic balance varying from mill to mill. The soundness of the trend, which might extend to newsprint, needs to be determined.

The rapid expansion in the semi-chemical field was likened to that experienced in kraft, and seen as a factor in balancing forest drain and growth. Following discussion embraced possible diminution of air pollution by the M&D digester; rapid cooking with high temperatures and recovery of the turpentine products.

Process at U. of Florida

In discussion of high temperature quick cooking much of the detail was furnished by William J. Nolan, U. of Florida's engineering experiment station, who spoke of high temperature and pressure causing disintegration of the outer chip before the center is touched, leading to 35% yield loss. Outlining the station's findings, he reported: Semi-chemical pulps are being produced continuously in approximately 30 minutes cooking time. Any continuous process must involve a short cooking cycle to be economically sound. Processes described in literature are unwieldy and require complicated equipment.

The U. of Florida process produces chemical pulps of high yield in 15 minutes actual pulping time with less degradation of cellulose than in present batch methods. The basis is recognition that sufficient wood surface area must be supplied so that uniform pulping may occur, but cellulose fibers must not be shortened.

The process has three steps: (1) Softening of chip lignin prior to surface expansion by subjecting the chips to 170 psig steam pressure for 5-10 minutes. Sufficient alkali, usually Na_2CO_3, is added to keep the pH above 7; (2) Hammer-milling the softened chips to get a product resembling match sticks with broomed ends, each of original chip length; (3) pulping processed chips at constant temperature and constant concentration. Steam pressures of 130-170 psig may be used. Concentrations of 20-80 gpl are used, depending on desired pentosan content of resultant pulps. Concentration is maintained constant by injections of high concentration alkali at several points, thus avoiding excessively high liquor-wood ratios. Cooking times of 10-15 minutes are used.

High strength kraft from pine or high alpha pulps from pine or hardwoods may be produced in 15 minutes. For example, an oak pulp of 42-44 percent yield with less than one percent screenings may be produced with an analysis of 93-95% alpha cellulose, 3-5% pentosan and less

MORE OFFICERS ELECTED AT JAX (left to right): TOM COLDEWAY, St. Joe, Paper Co., new First Vice Chairman of Southern Div.; VINCENT K. SHANNAN, Mead Corp., Lynchburg, Va., First Vice Chairman of Southeastern Div.; CLYDE JONES, Ecusta Paper Corp., Second Vice Chairman, T. R. BARNES, Champion, Canton, N. C., Third Vice, and ROBERT B. WHITE, Sonoco, Secy.-Treas., all of Southeastern Div.

VISITORS—SUPERINTENDENTS AND OTHERS at Fernandina where they visited mill of Container Corp. of America. Their hosts were: 4th from left—C. R. HUNSICKER, Gen. Mgr., and 7th from left—R. D. PHINNEY, Plant Mgr.

SOUTHEASTERN CONVENTIONEERS

Jacksonville greeters (l to r): GLEN SUTTON, from Sutherland Paper, Kalamazoo, National President of the Supt. Assn., and MRS. GLEN SUTTON;

OTHA WINNINGHAM, Gen. Supt. at National Container in Jax, who completed a year as Southern Chairman. Born in Mississippi, he started in the industry in '24 at Bogalusa, worked in Camden and other Southern Kraft mills—once outside the South at Everett (Wash.) Pulp & Paper 20 years ago.

W. C. (JAKE) HAYES, Paper Supt. Nat. Container in Jax, who was Division Secretary-Treasurer, helped on the program. Born and raised in Virginia, he started with Chesapeake at West Point.

FRED BOYCE, Pres. of D. J. Murray Mfg. Co., and founder of the Supts. Assn., and C. L. DURKEE of the Murray Company, both from Wausau, Wis. Mr. Durkee gave paper on continuous cooking.

LEONARD GROWDEN, Mead Corp., Lynchburg, Va., Operating Supervisor of the Mead group of semi-chemical pulping plants in the chestnut belt, who was Moderator of Semi-Chem Round Table, and WM. MACKENZIE, Chief Eng., Simpson Logging Co., Shelton, Wash., who came all the way from the Pacific Coast for the Southeast Conventions.

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GROUP AT LEFT—AT HOLLEY-EDWARDS CO. DINNER at Jacksonville (l to r): HARRY WESTON, National Secy-Treas. of Supts. Assn., Chicago; JUSTIN McCARTHY, St. Regis Chief Engineer building new mill at Jacksonville; MILTON BIXBY, Sales Chief of Paper Maker Chemical Dept., Hercules Powder Co., Wilmington, Del., C. S. HEUSTIS, Mgr. of Container Board Production, Robt. Gair Co. Inc., New York City, and their host, BOB EDWARDS, partner in Holley-Edwards Sales, Inc., which represents Lubriplate, Worthington, SKF and other lines in South, offices, 1738 E. Adams, Jacksonville.

GROUP IN MIDDLE—RAYBESTOS-MANHATTAN, Manhattan Rubber Div. delegation (l to r): HAROLD H. BURROWS, Passaic, N. J., Mgr. of Roll Divisions; JAMES E. POST, Sales Engineer from Passaic, who gave his first convention paper—a symposium on types of rubber-covered rolls; JOHN W. DEGAN, Mgr. of Charleston, S. C., Plant, and HANK JONES, Manhattan's Representative in Southeast who lives at St. Petersburg, Fla.

AT RIGHT—TWO OF HOSTS TO TOURING SUPTS. who visited Hudson Pulp & Paper's expanding Palatka, Fla., mill on final day: J. L. RICHARDSON, Gen. Supt., at left, and RAE H. MILLS, Resident Engineer.

FROM YANKEELAND AND DIXIELAND

AT JACKSONVILLE convention (l to r): DAVID C. METCALF, Pulp Supt. since 1925 at Brown Paper Mills Inc., Monroe, La., and before that with Brompton in Canada and Federal Board in Jersey. CLARENCE BROWN, representing H. Waterbury & Sons, Oriskany, N. Y., and brother of Sid Brown Jr., Paper Supt. at Big Island, Va.

DOUGLAS G. SUTHERLAND, Vice Pres., Sutherland Refiner Corp., Trenton, N. J., whose hot stock refining process was discussed.

TALBOT "PETE" PETERSON, Asst. Secy. and Sales Rep. for Valley Iron Works, Appleton, Wis., which makes the Sutherland equipment and other custom-built millprocess equipment. He was Army Capt. in Europe in World War II.

ALBERT NYITRAY, Sales Mgr., Eastwood Nealley Corp. Belleville, N. J., and his company's representative in the South, ALBERT S. LANDERS. HOWDY VANDENBERG, Staley Co. of Decatur, Ill., who came from Kalamazoo, Mich., and GEORGE HARDAKER, of ASHEVILLE, N. C., Southern rep. for Lockport Felt Co., Newfane, N. Y.

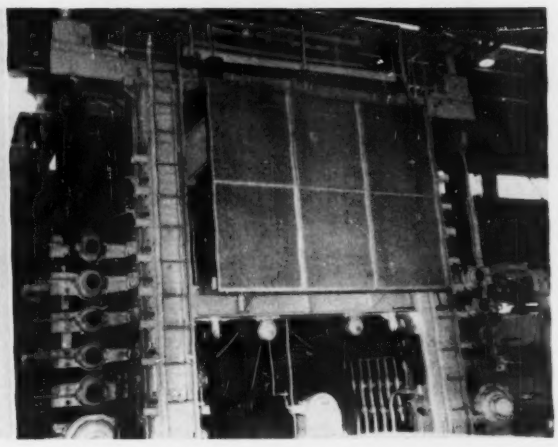
sonville, discussed wood conveyors and preparation, asserting too little attention is given this phase. National Container had been operating a steel pulpwood flume above ground for seven months, and an illustration accompanies this article. Mr. Farris reported very little maintenance anticipated. Water is changed each shift. This is one of the few above-ground flumes in the industry. (A PULP & PAPER editor visited and reported in May, 1949, issue on 26 miles of wooden flumes from woods to mill at Baie Comeau, Quebec.)

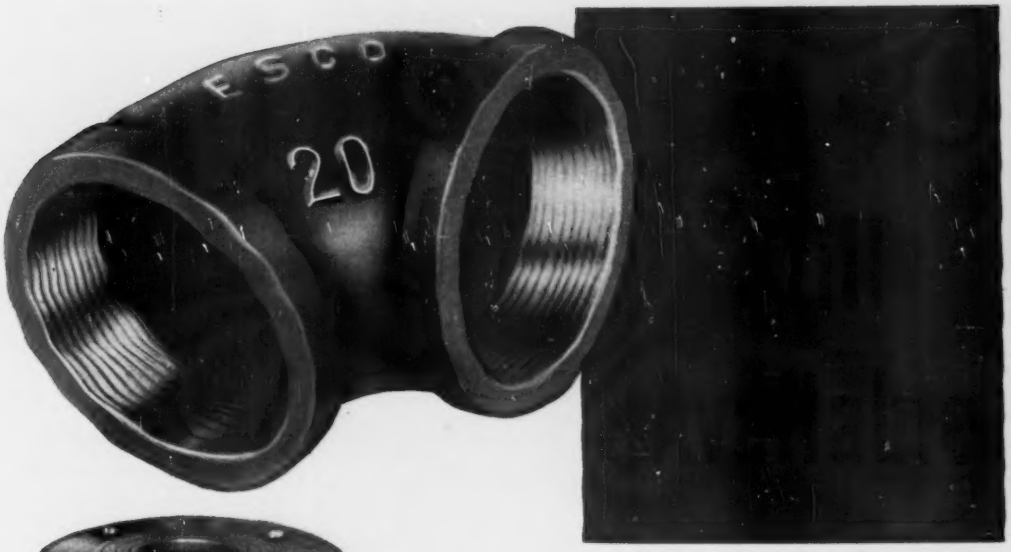
Chromium plated surfaces remain clean, and get more attention than other type surfacing because they respond to cleaning, said C. H. Belvin, Chromium Corp. of America. He stressed the much greater facilities today for plating, and extended life gained for plated items.

Continuous Digester

Continuous cooking in the new M&D U-shaped digester developed by Madura

HERE ARE TWO VIEWS of a recently installed Beloit Fourdrinier machine viewed during the Mill Tours of delegates. At left is headbox and inlet end of 160-inch trim wire. At right is calender stack arrangement on this same machine. Big lower center roll dries the coating. Another big roll is above; behind the screen. Stacks and reel are from Beloit Iron Works, Beloit, Wis., builders of the machine.





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HERMANN-EMERSON PACT

SAM E. CROCKER, Jr. (left), 428 Big Bayou Road, Pensacola, Fla., becomes Southern representative for Claflin continuous beaters and refiners under agreement announced by GEORGE A. HERMANN (right), of Hermann Mfg. Co., Lancaster, O. The Emerson Mfg. Co. sales organization throughout U.S. have become exclusive sales agents for the Hermann Claflin equipment. Mr. Crocker, member of a well known New England papermaking family is a Harvard alumni, class of '31, was based at Lawrence, Mass., before moving South.

than 1% lignin. Laboratory work is about to be taken into pilot plant.

Hot Brown Stock Refining

A further report on hot brown stock refining (see PULP & PAPER, Dec. 1950) was given by Franklin L. Jones, St. Joe Paper Co., Port St. Joe, Fla., who spoke on this subject at the 1950 meeting. The company embarked on its program March 13, 1950, the purpose being to obtain a greater paper yield from its wood, or conversely put to obtain the same volume of paper from less pulpwood. Starting with chips in the one-quarter to one-half inch screen classification, the mill studied cooking methods. Portions of Mr. Jones' paper follows this review.

Douglas G. Sutherland, Sutherland Refiner Corp., Trenton, N. J., presented an outline drawing of the St. Joe Paper Co. hot brown stock refining system, explaining its operation. He also described a new Sutherland Breaker Trap for defibering, and for efficient removal of tramp metal (including non-ferrous) by centrifugal force application. The hot brown stock system was said to result in a 25% increase in yield. Mr. Sutherland said any Southern mill could be put on 60%; if over 65%, cooking trouble may be experienced. When around 60% yield, the pulp will defiber without damage to the soft warm stock.

Pre-Refining at North Carolina Pulp

In talking about pre-refining of sulfate pulp, Stewart Saunders, North Carolina Pulp Co., Plymouth, N. C., reported that among the experiences in starting is that the washer picks up a thinner sheet, evaporators have alkali trouble, there are more fines in the black liquor and more plugging. This stacks up to a need for more supervision. Against this is added security for the future supply of wood for the mill. They did cook to 38-40 permanganate but now run 42; use 6200-6400 alkali per cook; cut the former 1.55 cords per ton of yield to 1.45 cords per ton. The mill has five digesters and produces 550 tons of board daily. A uniform cook is obtained through use of automatic instruments. The paper has been improved, a more uniform quality being obtained. At present the mill does not anticipate putting in a bleach plant.

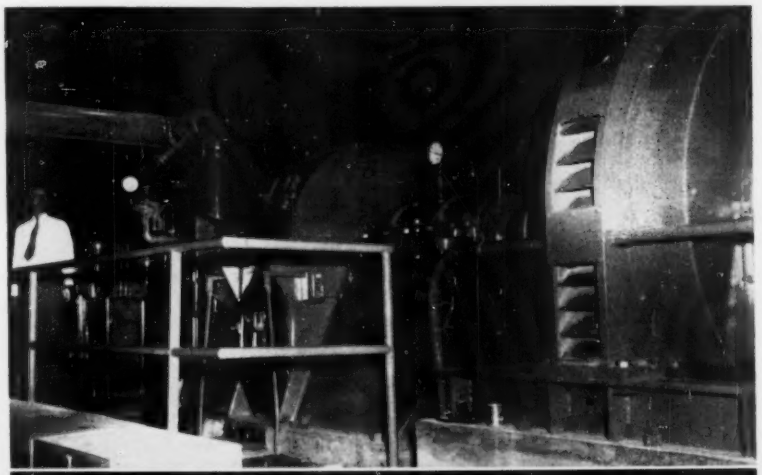
MILL TOURS

The meeting concluded with tours to National Container Corp., Jacksonville, Hudson Pulp & Paper Co., Palatka, and Container Corp. of America, Fernandina. At Fernandina, the visitors found the mill planning to add another Hydrapulper, and a new chipper. The mill, completed during post-war years, recovers 200# of naval stores per ton. It has a bucket-fed Traylor lime kiln; four digesters; Babcock & Wilcox power boiler and new Combustion Engineering recovery boiler; two Westinghouse turbo-generator (one 6000 KW and one 3600 KW); eight 42-inch and four 48-inch General Electric driven Sutherland refiners ahead of the paper machine; a 160-inch trim Beloit Fourdrinier with 72 drier rolls.

Visitors also learned Container Corp. plans to replace its even dozen diffuser washing system with a modern-type vacuum washer, and install a Sutherland hot brown stock refining system to yield about 57%. This is planned to effect a reduction in the amount of pulpwood consumed by the mill. The mill was built by Rust Engineering. Visitors were guests of the company at a shore luncheon.

DAMON & PYTHIAS OF PAPER

JOE SCHEUERMANN (left) and ALLAN HYER (right), long close friends, now together with Bagley & Sewall, were at Jacksonville and Mr. Hyer moved on to the Savannah meeting. Mr. Scheuermann takes care of the winder, slitter and backstand end of the business from 42nd and 5th Ave., New York. Mr. Hyer is sales chief at the Watertown, N. Y. headquarters, and expected the new B-S machine at Pensacola would have paper over for the new year.



TOP VIEW SHOWS a Sutherland Refiner installation in one of the mills inspected by visiting delegates at Jax Convention. This shows part of a group of Sutherlands—8 of 42 inches, and four of 48 inches, all GE driven.
LOWER VIEW shows Convention Delegates inspecting a new 6,000 kw Westinghouse turbo-generator, in one of the mills. At left is W. A. CHILDS, of Container Corp. Engineering Staff; at right is J. R. BUCHANAN, Mead Corp. Division Manager at Sylva, N. C.

Two Papers at Jacksonville:

CARE OF RUBBER COVERED ROLLS

By James E. Post

Sales Engineer, Manhattan Rubber Div., Raybestos-Manhattan Inc., Passaic, N. J.

(We publish here portion of Mr. Post's talk on proper care of rubber rolls. He stressed periodic inspection, proper storage and careful handling).

1. A rubber roll should never be permitted to rest on the surface of the covering. If allowed to do so any length of time, the rubber will take a "set," and a flat spot will be the result, necessitating regrinding. Rolls should be supported on their journals so covers do not come in contact with any other object.

2. When machine is down, weights should be released and rolls lifted free from contact with any other surface to eliminate possibility of a flat spot under the pressure of even its own weight.

3. Rolls should be kept away from steam pipes, boilers, driers, and radiated sunlight. These elements will cause surface oxidation, and cracking or checking will result under pressure.

4. Rolls should be stored, wrapped in paper in a dark, cool place, and in wooden cases, preferably the cases originally designed for the rolls.

5. Rolls in storage a long period should be reground, or at least resurfaced, to remove unavoidable surface oxidation before returning to service, in interest of preventing checking and cracking of covering.

6. Rolls should be reground at the proper time in the interest of overall economy and quality production.

7. Care should be exercised in handling rolls, particularly when installing and removing from the machine. Either rope slings supported on journals with wood blocks to take up rope tension while being lifted, or fairly wide belt slings properly balanced around the roll surface at center, are most practical when possible.

8. Take care to eliminate possibility of machine oil and grease coming in contact with surface of rubber. If this happens, wash off immediately using high octane gasoline (not ethyl) or alcohol.

9. Pack rolls safely and securely for shipment, whether just for regrinding or for new covering. This will insure safe handling and overall economy.

10. Inspect rolls often. Keep them in good operating condition, and it will pay dividends in top quality and increased production.

A HIGH YIELD PULP AT ST. JOE

By Franklin L. Jones

St. Joe Paper Co.

Increased pulp yield is an excellent method to reduce per ton cost of paper products. With this in mind, on Mar. 13, 1950, St. Joe Paper Co. embarked on refining hot brown stock. The primary basis for Hot Stock Refining is increased pulp yield by utilization of "hard" pulp.

The first phase is proper chip preparation. We feel that chips in ¼ to ⅜ in. screen classification are desirable. It is known that as we approach a smaller chip, percentage of sawdust is increased. However, it is possible higher yields can be obtained through more uniform packing of the smaller chips.

St. Joe employs four digesters of all welded construction, having a capacity of 4300 cu. ft. each. Direct steaming with 125 psi steam is employed. Each of four-4 in. steam lines contains a 1¼ in. orifice plate, used to assist in obtaining uniform steaming over a given period. Cooking operations are manually controlled at present.

After several months of operation in which we evaluated results of changes in cooking procedure we finally arrived at this procedure:

In an effort to obtain uniform pulp in a relatively short cooking period, digesters are brought to full pressure of 98 psi in one hour. The idea being to obtain even liquor distribution by violent agitation. The digester remains at full pressure 45 minutes and is blown after a total steaming time of 1 hr. 45 min. A very rapid rise in temperature is made, until a maximum temperature of 342° F is reached.

The liquor requirements of a high yield cook are quite different from a cook producing normal yield pulps. *Fig. 1* shows a comparison between the liquor requirements of a cook for normal yield in the manufacture of linerboard as compared to a high yield cook producing pulp for a similar grade. Note that total active alkali amounts to 472 pounds per ton of pulp. The pulp produced from this type of cook has a chlorine number of 13 to 15 and a TAPPI permanganate number of 43 to 46. The spent black liquor as blown has a total solid content of 18 to 20%. Total steam required per digester is 38,500 lbs. A 4300 cu. ft. digester cooking in this manner yields approximately 16.5 to 17.0 tons pulp per cook, or 7.5 pounds pulp per cu. ft. of digester capacity. Upon refining and screening through 0.125 in. screen plates, a high yield pulp normally produces 4-6% rejects. The rejects are sent to a Jackson & Church type ZL press for dewatering, from this point they are returned to the blow tank at a consistency of 38-40 per cent.

The question is often raised as to proper procedure for determining degree of hardness or degree of delignification of such hard pulps. The usual permanganate number determinations are highly inflexible in such high lignin ranges. Several mills cooking high yield pulps are using a "chlorine number" which appears to give reproducible results. A comparison was made between the chlorine number and permanganate number which in one case 60 mls of permanganate is used and in another, 50 mls of permanganate is used. In the case where 50 mls of permanganate is used very poor correlation is obtained. However, in the case where 60 mls of permanganate is used a mathimatical curve shows good correlation.

In studying the strength characteristics of high yield pulps as compared to normal yield pulps, it is noted that the initial mullen development is much more rapid than in the case of normal yield pulps, this is no doubt due to pre-refining of the high yield pulp. High yield pulps also yield a higher tear value at the point of maximum mullen development as compared to normal yield pulps.

The subject of cooking is a highly controversial one, and often the relative value of pulp produced by different procedures is subject to debate. There is one phase of utilizing high yield pulps which we feel is of the utmost importance and not subject to debate. We speak of course of increased yield and resulting wood conservation. During 1950, St. Joe Paper Co. reduced its wood consumption by slightly more than six times a typical wood the amount yard pile of 3200 units of wood (about 20,000 units), as compared to the amount of wood required to produce the same tonnage in any previous year prior to Hot Brown Stock Refining.

FIG. 1—KRAFT LIQUOR REQUIREMENTS AT ST. JOE

TYPE OF PULP	TOTAL LIQ. PER AD TON PULP CU. FT.	WHITE LIQ. PER TON CU. FT.	BLACK LIQ. PER TON CU. FT.	ACTIVE ALKALI PER TON LBS.
BAG PAPER & LINERBRD.	90-200	80-100	10-110	520-650
HIGH-YIELD	91	73	18	472

JOHN T. ROBERTS, (left), Gladding McBean and Company, recently transferred from Tacoma to Seattle office, to relieve C. E. Goudge, on industry calls in Northwest Washington and the Olympic Peninsula. Starting together with the company at Spokane in 1936, the two have worked together ever since, other than time spent in war service. Goudge has been advanced to other sales duties with the company. FRANK CLAWSON, (right), newly appointed sales representative of the Draper Felt manufactured by Draper Brothers Company, Canton Massachusetts. Will cover midwest mills with L. H. Breyfogle and L. L. Griffiths, Jr. He was recently employed by the Sutherland Paper Company at Kalamazoo, Michigan. His headquarters will be at 809 Lakeview Drive, Kalamazoo, Michigan, or correspondence relative to felts can be addressed to him in care of the Draper Brothers Company, Canton, Massachusetts.

Strattner Takes Washington Post

With recent advancement of Vice Pres. Gabriel J. Ticoulat of Crown Zellerbach to be DPA Deputy Administrator for International Problems, in Washington, D.C., Lawrence W. Strattner, administrative vice president of West Virginia Pulp & Paper Co., New York, has gone to Washington to take over Mr. Ticoulat's recent key position of deputy assistant administrator in the National Production Authority for the Chemical, Rubber and Forest Products Bureau.

Mr. Ticoulat will serve under Manly Fleischmann, administrator of the Defense Production Authority. NPA's pulp, paper and paperboard divisions, headed by John Maloney of Hoberg Paper Mills, and originally headed by Mr. Ticoulat, are among divisions under Mr. Strattner.

All across the North American continent, north to south and east to west, the industry is improving woodlands technics and introducing large scale conservation, reforestation and mechanization.

WOOD FOR THE NEW CELANESE MILL

Pulpwood logs are rolling down to the new Columbia Cellulose Co. dissolving sulfite pulp mill at Watson Island, B.C., with regularity now over the Canadian National Railways system from Terrace West, and it is probable that during the coming years the bulk of the logs from inland points will continue to be delivered by railroad.

At first it was planned to "drive" the Skeena River and extensive preparations were made to that end. However, a combination of circumstances discouraged this project.

Cecil Cosulich, head of River Towing Co., New Westminster, long experienced in handling logs on the Fraser River, was called in last summer and it is probable many of the logs will be flat-rafted to the mill along lines suggested by Cosulich, the balance moving to tidewater by railroad.

T. A. V. Tremblay, the river drive expert from Quebec, who helped with the experimental drives on the Skeena, has been transferred to the Columbia River region near Castlegar, B.C., where Celanese Corp. of America, parent company of Columbia Cellulose, is surveying the possibilities of a huge multi-use forest operation, with pulp and newsprint mills and plywood plant. It is believed rivers in that section may be easier to use than those in the Skeena country.

But in spite of this difficulty in one phase of the company's operation, the movement of logs is being well maintained, both from the company's own camps in the Terrace area and from the various coastal camps, most of them on Khutzeymateen Inlet, Portland Canal, which will ultimately provide about 25% of all the pulpwood used at Watson Island. At these latter camps, too, flat rafts and towing will be the technique used, the distance averaging 40 miles. Captain D. R. Wilson has been appointed marine superintendent.

The Khutzeymateen camps, up the coast from Watson Island, are pretty fully mechanized. Here are some of the main items: Four Tyee yarders with Cummins diesel engines; a Clyde slackline yarder, Cummins-powered; a Hayes 12-12 yarder with Hercules engine; two Skagit yarders, one with a Hercules and the other with a Cummins 200 h.p. diesel, one International TD 24 tractor with Isaacson blade, towing winch and arch. All the yarders have Gearmatic transmissions.

In the interior camps around Terrace, many of them operated by independent loggers, high-lead equipment includes two Hayes 1010 yarders and a Loggers' Dream unit, working in conjunction with International and Caterpillar tractors. The company has four Internationals on the job.

For loading there are: A 2½ yard Lima shovel, a Northwest one yard shovel and a Northwest ¾ yard shovel. Two Bucyrus Erie shovels have been used for road construction by Columbia Construction Co. (not related to Columbia Cellulose) together with International tractors.

Woods Manager Rae Johnson, who was with Weyerhaeuser Timber Co. 20 years, has been working on a long-term program for the most effective utilization of the company's forest which consists of some 690,000 acres obtained under the first sustained-yield management license to be issued by the British Columbia government.

"We plan to cut the over-mature timber first," Mr. Johnson told PULP & PAPER.

Pulpwood Meet In Madison Lab

Emmett Hurst (shown in picture) woodlands manager of Consolidated Water Power & Paper Co., Wisconsin Rapids, was scheduled to lead a discussion on pulpwood storage and decay problems in one of the feature events of the American Pulpwood Association's Lake States Technical Committee meeting in the U. S. Forest Products Laboratory in Madison, Wis., Dec. 6.

Bruce Buell, Northern Paper, on effect of growing conditions in managed forests, and Vince Martin of Marathon, on evaluation of wood and pulp yields, were other discussion leaders.

Mr. Hurst has been with Consolidated 20 years, is a graduate of New York State Forestry School at Syracuse University and was in the U. S. Forest Service in Pennsylvania and Arkansas and was four years with Munising Paper Co. before he went to the Rapids.

SIZE OF PULP LOGS produced in the Terrace country for Columbia Cellulose Co. is indicated by this picture showing part of a cold deck.

LOADING LOGS FOR COLUMBIA CELLULOSE CO. on the West Kalum River Road, near Terrace, B.C., with a Northwest 1-yard shovel equipped with steel gooseneck boom. Truck is a Mercury.

LIMA 2-YARD SHOVEL LOADING LOGS at Canadian National Railways spur at Terrace, where Columbia Cellulose Co's interior woods operations are concentrated. A Northwest shovel is shown loading in the background.

A NEW TYPE WINCH

for Saw-log and Pulpwood Operators

THE HYSTER® D4 HySpeed Winch
mounts on
"CATERPILLAR" D4 TRACTORS
Seat or Fender Tank Type

ANOTHER HYSTER FIRST—the only winch of its size and type on the market. Designed specifically for saw-log and pulpwood logging operations.

- **Free Spooling**
- **Friction Driven Clutch**
- **Fast Line Speeds**
- **Quick Acting Brake**
- **Dual Lever Hydraulic Controls**
- **Overwinding or Underwinding Drum**
- **Safety Guard for Operator**

Plus (optional equipment) bundling bumper and special *ESCO* sling for forming and handling bundled pulpwood.

CURRENT DELIVERY. See your Caterpillar-Hyster dealer or write for technical bulletin . . . A Hyster HySpeed Winch is also available for Caterpillar D8, D7, D6 and DW10 Tractors... Hyster makes a complete line of tractor tools for logging, including arches, the Hyster Sulky®, towing winches, and Hystaway® excavator-crane for loading and road building.

FORMS... TRANSPORTS Bundled Pulpwood

The Hyster D4 HySpeed Winch with bundling bumper and special *ESCO* sling is used in the woods to form pulpwood logs into tight bundles. The same tractor can then ground skid the bundles to the landing—or the packaged wood can be moved by highlead or arch logging methods.

HYSTER COMPANY

2902-72 N. E. CLACKAMAS ST., PORTLAND 8, OREGON
1802-72 NORTH ADAMS STREET, PEORIA 1, ILLINOIS

WORLD'S LARGEST MANUFACTURER OF TRACTOR WINCHES . . . OVER 40,000 SATISFIED USERS

This marks the third time that Stanley A. Wilkes, a veteran mill superintendent and now a Vermont crackerbarrel raconteur, has had a story accepted for this column. We think our readers will agree that the story told here of the stubborn sawmill operator is a worthy addition to the long series of tall tales we have published in this corner and is on a par with any of them.

Any of our readers are cordially invited to send in a story. It doesn't have to be even remotely tinged with reality or any true event—stories in the Baron Munchausen tradition are desired. For each one printed, the sender will receive an honorarium of $5. It has been suggested by some readers that the stories eventually should be published in book-form, and this is being considered.

Mr. Wilkes was born in Buffalo, N. Y. He started in the industry in that pioneer of the kraft mills, Mosinee, in Wisconsin, in 1917. From there his papermaking career took him to Vermont, Michigan, Louisiana, Arkansas, Alabama, Oregon, Florida and Mexico—always in kraft. Now he is farming—address, Route No. 2, Hardwick, Vt. But he admits to moments of seriously considering a return to the big machines. Here is Mr. Wilkes' story:

Starting Up A New Mill

In my younger days I helped to start up quite a few mills and I ran across many peculiar experiences. One I recall vividly because it spoiled my lunch time, which is nothing new to a papermaker, but it sure peeved the officials of the company.

This certain company mill was in the sticks and for a turbine operator, they hired a saw mill steam engineer, who claimed to have had lots of experience.

The papermakers got everything ready and we started the paper over the machine about 11 a.m.

Everything went off fine, no hitch anywhere. Paper was as expected. All of the officials of the company were patting themselves on the back and having a big time. Then the whistle blew the noon hour and at the same moment—bingo! The machine stopped dead.

Everyone got excited. Some of us ran down to the basement to see what had happened. We looked everywhere but could not find the turbine operator.

Finally, on the advice of one of the mill officials we even emptied the broke beater thinking that he may have fallen in there accidentally. But found no sign of him anywhere.

About that time the 1.00 p.m. whistle blew and in walks the turbine operator, pretty as you please, picking his molars and wondering what the excitement was about.

Everyone hopped on him at the same time and when the smoke cleared away he told us that we were all crazy. He said he had worked in saw mills for forty years and never missed a lunch and he would be darned if a bunch of crazy papermakers would force him to change his lifetime habits. He then picked up his belongings and left and to this day he still thinks that all papermakers are nuts and being a papermaker myself I sometimes agree with him.

NORTHEAST NOTES

LAURENCE F. WHITTEMORE, president of Brown Co., Berlin, N.H., is one of a number of American business leaders recently selected for special committee duty with the United States Chamber of Commerce.

BEN G. RHODES has been named central states manager of American Forest Products Industries, Inc., with offices in Huntington, W. Va. He was formerly farm editor of "The Raleigh Register," Beckley, W.Va.

KENWOOD DIXON goes to Robert Gair Co., Inc., from Keyon and Eckardt, Inc., to serve as art director, according to *WRAY H. CALLAGHAN*, sales manager of the company's folding carton division.

MALCOLM G. CHACE, JR., has been named a director of International Paper Co. to succeed his father, *MALCOLM G. CHACE*, a director since 1922. The younger Mr. Chace is president and director of Berkshire Fine Spinning Associates.

S. HARLEY JONES, president, and *PAUL B. FOWLER*, sales engineer, both of E. D. Jones & Sons Co., Pittsfield, Mass., underwent recent operations from which they have recovered. Mr. Jones was operated on in Rochester, N.Y., after an appendicitis attack on a hunting trip.

ALEX SENDER SOLOMON, associate in Enterprise Paper & Chemical Co., Baltimore, died recently.

MEMBERS of the industry named to the Travelers Aid Society campaign committee in New York City include *EDWARD R. GAY*, St. Regis Paper Co.; *HARRY E. GOULD*, Reinhold-Gould, Inc.; *NORMAN F. GREENWAY*, Robert Gair & Co.; *JAMES F. LEVENS*, George W. Millar & Co.; and *THOMAS A. MAGEE*, Gray Envelope Mfg. Co., Inc.

MILLARD F. HAYES, JR., field engineer with The Sandy Hill Iron & Brass Works, left for his regularly-scheduled trip to visit pulp and paper industries of Central and South America. He will study the practicability of new sites for paper mills. Mr. Hayes spent 76% of his time in the area during the past five years overseeing the erection of machines built by Sandy Hill.

C. S. HERR, resident woods manager, Brown Co., was host to 12 Norwegian forest industry executives, foresters and forest workers, the visit sponsored by ECA.

ROBERT GAIR CO. Old Timers Assn. elected officers during their 19th annual banquet at the Hotel New Yorker, New York: *JOHN PAXON*, honorary president; *FRED STOCKER*, president; *EDWIN J. BAKEWELL*, vice president; and *JOHN A. COAKLEY*, secretary-treasurer. Retiring president is *THEODORE E. KAMISH*.

DR. RALPH T. NAZZARO has been named to head the newly-created position of director of research by Westfield River Paper Co., Inc., and its subsidiary, The Glassine Paper Co., headquarters in Russell, Mass. Dr. Nazzaro has experience in both plastics and paper, and is chairman of the plastics committee of Tappi.

JACK MCGILL has been appointed construction engineer of Brown Co., according to an announcement by *GEORGE CRAIG*, chief engineer for the company. Mr. McGill has been with Brown since 1948.

WILLIAM CORBIN, whose name (spelled backwards) has served for many years as the trade name for Brown Co.'s "Nibroc" paper towels, and for whom a machine in Brown's Cascade mill was named—"Mister Nibroc"—passed away recently. He has been honored as the company's first papermaker, and as first superintendent of the Cascade mill.

WILLIAM A. HANWAY, secretary of the International Paper Co., has accepted the chairmanship of the Paper Committee for the New York City Cerebral Palsy Society's 1951 Campaign. Born in Brooklyn and a graduate of Yale University, Mr. Hanway originally started his career in the investment banking field with Harris, Forbes & Co. from 1920 to 1929. He joined the International Paper as vice president of International Paper and Power Securities, Inc., and later served as president of that company. He became secretary of the International in 1941.

Mitchell Is Chairman

The Penjerdel Superintendents—the Penn.-N.J.-Delaware division — elected these officers recently for the 1951-52 year:

Chairman—Elmer Mitchell, Glassine Paper Co., Manayunk (Philadelphia), Pa.; first vice chairman—George Suydam, Riegel Paper Corp., Riegelsville, N.J.; second vice chairman—Andrew Luettgen, P. H. Glatfelter Co., Spring Grove, Pa.; third vice chairman—Clarence F. Kingston, Hammermill Paper Co., Erie, Pa.; and secretary-treasurer—Joseph A. Paciello, DuPont Co., Philadelphia.

TITAN Wins in the Woods!

Photographs taken at Harbor Plywood Corporation's logging show near National, Wash.

New Series 60 ADDING FAME TO TITAN NAME

There's just one true test of a power chain saw—how does it perform on the job, under pressure, when there are tough production schedules to be met, day after day. Leading logging operators have long agreed—TITAN is tops on the job. And TITAN'S reputation for tireless performance is growing as more and more loggers use the new TITAN Series 60—the lightweight saw with the power punch. Use the TITAN Series 60 as a one-man or two-man saw. It weighs only 37 pounds complete with 26-inch bar and chain—delivers power to spare for a 5-foot bar—is available with straight blade bars from 26 to 60 inches or 19-inch capacity bow saw. It's a pleasure to see the TITAN Series 60 tackle any job in the woods—fell trees, buck, limb, cross-cut, rip, square timbers. It's a pleasure to feel how easily this saw handles, how fast and smoothly it operates. Try the new TITAN Series 60 and you'll agree—here's another TITAN that's tops on the job.

Write for new, free folder describing the complete line of TITAN Bluestreak Chain Saws.

• *Ask your dealer for a TITAN demonstration today.*

TITAN
CHAIN SAWS, Inc.
SEATTLE 4, WASHINGTON

Two-man TITAN One-Twenty with 3' to 12' bars.

TITAN Series 60 Bow Saw with 19" capacity.

One-man TITAN Series 40 with 18" to 44" bars.

Boks of Antwerp Agency Tours Canada and U. S.

William F. Boks, administrator of Gross & Irgens S.A., 2 Longue Rue de l'Hopital, Antwerp, Belgium, woodpulp sales agents for the big Borregard mills of Norway and other mills in Scandinavia, has been making an extensive tour of the Canadian and northern U.S. pulp and paper industries from Atlantic to Pacific.

In America he is also representing Lorentzen & Gutzeit, pulp industries agents on the Boulevard Malesherges in Paris, France. Mr. Boks headed back to New York from the West Coast in November. He was hopeful of obtaining bleached pulps for Europe.

Kinsley Process in Brazil

Brazilian interests have signed a contract with Kinsley Chemical Co., of Cleveland, O., for construction of a $2,000,000 paper pulp mill of 50 tons daily capacity at Campinas, Sao Paulo, Brazil, using cane bagasse.

Wheelwright's New Book In Second Printing

Demand for William Bond Wheelwright's new book, "Practical Paper Technology," has required a second printing. Compactly in about 100 pages, it relates many essentials of paper technology and besides being comprehensive, is well-organized and well-written.

Over 50 paper companies have purchased bulk orders. Typical of some of the letters Mr. Wheelright has received is one from D. Clark Everest, president of Marathon Corp., who wrote that his company was ordering additional copies "to be used with our trainees."

Herbert W. Suter, Jr., general sales manager of Champion Paper & Fibre, ordered 50 copies for that company's general offices in Hamilton, O.

A trade edition bound in 90 lb. Buckeye Cover Paper is listed at $2.25; with 20% discount for 12 or more; a library edition, cloth-bound, is $3. (M. J. & W. B. Wheelright, 14 Hurlbut St., Cambridge 38, Mass.)

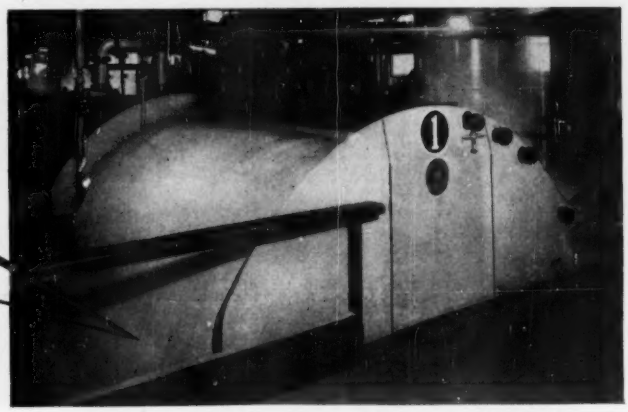
Virginia Mill Now Makes 500 Tons a Day

Total pulp production at Chesapeake Corp. of Virginia, West Point, Va., has been stepped up to slightly more than 500 tons per day as a result of many improvements. A modern combination of Kamyr and Ross Engineering Corp. pulp dryer is now making 150 tons per day.

The rating on West Point's 242 in. Pusey & Jones Fourdrinier machine, making liner and special kraft papers, is still the same, which makes the total pulp mill production over 500 tons. The number of digesters has been increased from nine to eleven.

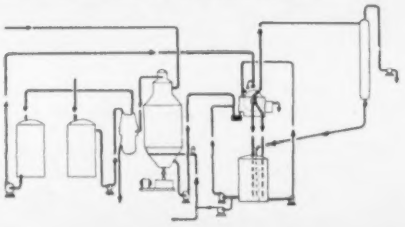
In our October issue, we described the new Combustion bark burning and boiler with spreader stokers, new CE recovery boilers, additional brown stock washing, flash drying for lime recovery, etc. Elis Olsson is chairman, M. C. McDonald, president, and Erik Zimmerman, general superintendent.

This HIGH-CONSISTENCY PULP SHEET means cleaner-washed pulp, with more solids in the liquor system



A single Swenson-Nyman drum provides 2-stage washing. Many installations are 1-drum 2-stage operations (as in flow sheet below); and others are 2-drum 4-stage, or 3-drum 5-stage systems.

Typical Swenson-Nyman Pulp Washer operations show discharges ranging from 16% to 23% BD, depending on the type of pulp. Such astounding results come from multi-stage operation and scientific design. Ask for Bulletin E-108.



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BUFFALO 2: 610 Jackson Bldg.
CINCINNATI 2: 729 Fed. Res. Bank Bldg.
HOUSTON 2: 825 M & M Bldg.
PITTSBURGH 22: 214 Empire Bldg.
NEW YORK 7: 30 Church St.
SEATTLE 1: 1326 Fifth Ave.
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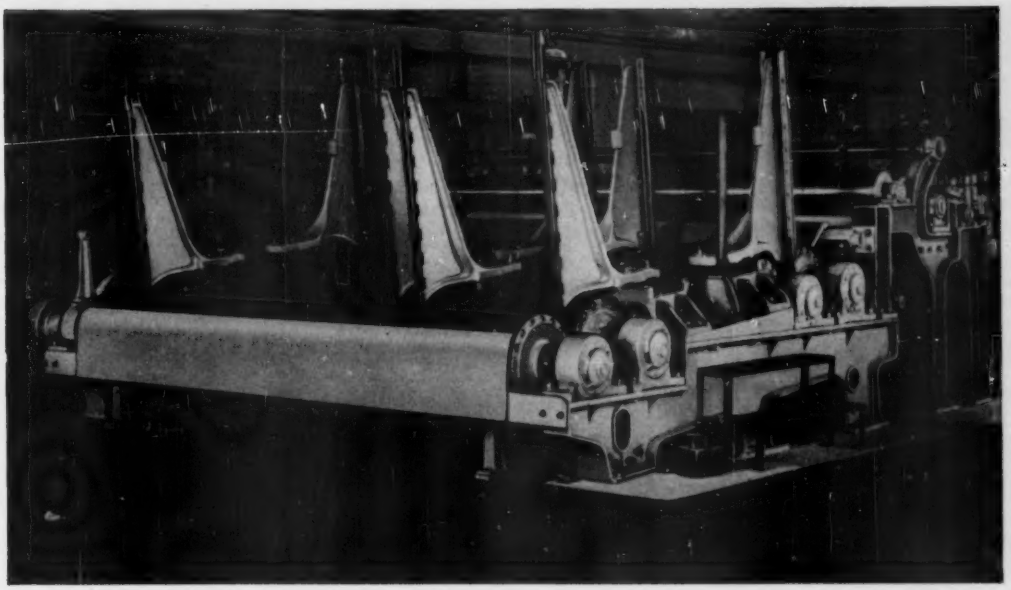
- Evaporators
- Pulp Washers • Deckers • Filters
- Digester Blow Condensers
- Surface Condensers
- Turpentine Condensers • Causticizers

NEW MOORE & WHITE 4-DRUM WINDER



HERE is an expertly engineered and precision-built *heavy-duty* 4-drum board winder—fast, efficient and dependable to fit the tempo of today's demands and operations. It is operated by a Moore & White mechanical drive, and all moving parts run in anti-friction bearings. It is equipped with M & W shear-cut slitters to insure clean edges to the rolls.

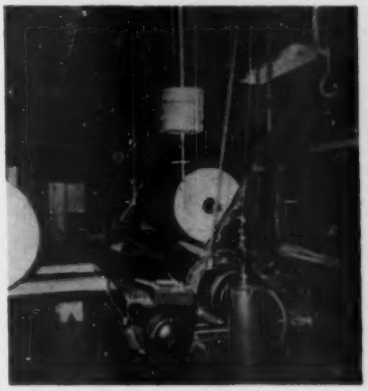
This new Moore & White winder will wind rolls up to 84 inches in diameter. It is available in widths up to the maximum requirements of modern paperboard mills. We can equip it with automatic roll ejectors which permit the completed rolls to be quickly and easily removed from the winder drums without being tended or handled by an overhead crane.

Write or call us today for more detailed information. Our sales engineers will make a prompt survey of your requirements and oversee the installation of the Moore & White winder or other equipment you need for faster, more trouble-free and more profitable operation.

The MOORE & WHITE Company
15th STREET & LEHIGH AVENUE · PHILADELPHIA 32, PA.

Represented on the West Coast by Dan E. Charles Agency, 618 Jones Building, 1331 Third Avenue, Seattle 1, Wash.

Above—*Moore & White 4-drum board winder equipped with Moore & White shear-cut slitters*



Above—*Moore & White 4-drum winder equipped with automatic roll ejectors*

CUSTOM-BUILT MACHINES FOR MAKERS OF PAPER AND PAPERBOARD

HOLLIS QUESTIONNAIRE

Your Replies Will Be Welcome

Superintendents and engineers of several board mills in various corners of this continent, as well as leading engineers with companies which build cylinder machines, told PULP & PAPER editors attending the recent industry meetings at Savannah, Ga., and Jacksonville, Fla., that they intend to send in their replies to some of the series of questions on *"STOCK FORMATION ON CYLINDERS,"* the provocative PULP & PAPER article written by R. Frank Hollis, general superintendent, Alton Box Board Co., Alton, Ill.

The more the merrier. "Cylinder men" are asked to send replies to: The Editor, PULP & PAPER, 71 Columbia St., Seattle 4, Wash.

To refresh your memory as to the questions asked by Mr. Hollis, turn to the article in the September, 1951 issue of PULP & PAPER, Page 36. A Michigan board superintendent, with many years in the business behind him, said it is the best article he had ever read on board machines!

He suggested that before we get through with publishing comments, we should invite Mr. Hollis to reply to his own questions—any or all of them. This we are doing, forthwith.

Last issue we published comments by the two gentlemen whose pictures are shown here. One is Arthur E. Drew, chief engineer, Southland Paper Mills. Mr. Drew has been at the Texas mill since it started up just before World War II. Before that he was in on construction at Union Bag in Savannah and Container Corp. at Fernandina.

A general reply by Mr. Drew was that he has seen many theoretical replies give amazingly poor actual results in practice. A specific reply by him was that fan pump suction ports and overflows should be located both at front and back of machines.

Mr. Jackson, who has been five years at Pensacola, was for years in the Newport News and Pensacola shipbuilding industries. He was born in Dubuque, Ia., got an M. E. degree in '28 at Cornell. He wrote answers to many of the Hollis questions (see page 70 November issue).

ANSWERED HOLLIS'S QUESTIONS

JESSE A. JACKSON (left), Paper Mill Engineer, St. Regis Paper Co., Pensacola, Fla., and ARTHUR E. DREW (right), Chief Engineer, Southland Paper Mills, Lufkin, Texas, are among the first industry men to send in to this magazine their replies to the questionnaire on stock formation on cylinders by R. FRANK HOLLIS, Gen. Supt., Alton Box Board Co., Alton, Ill., published as the lead article in Sept. 1951 issue of PULP & PAPER. Several engineers and superintendents at recent meetings in the Southeast said they were going to write replies. Please send replies to: Editor, PULP & PAPER, 71 Columbia St., Seattle 4, Wash.

SURPLUS POWER developed in northwestern British Columbia by Aluminum Co. of Canada, may shortly be utilized by a new pulp and paper mill to be built by Powell River Co. near Kitimat, southeast of Prince Rupert. Both companies are carrying on a survey of waterpower and wood potentials. Above: R. E. POWELL (left) President of Aluminum Co. of Canada, and HAROLD S. FOLEY, president of Powell River Co.

B-C'S REGIONAL SALES MANAGERS

Three sales managerships in the field—West, South and North—have been announced by and for the Black-Clawson-Shartle-Dilts organization. J. D. Haskell, who himself recently became the executive vice president of The Black-Clawson Company, made the announcements.

There are two new field offices—one in Appleton, Wis., headed by Don L. Stark and another at Atlanta, Ga., which has been operating actually for time, and is headed by Edward M. "Ted" Root.

A new Western Sales Manager, Gordon Petrie, has been promoted to that position to succeed his father, the late Robert T. Petrie, who perished in an airliner crash Aug. 24. Actually, permanent Pacific Coast representation for the Black-Clawson divisions is an old story, and in 1946 a downtown Portland, Ore., office was opened by the elder Mr. Petrie at 219 Mayer Bldg.

EDWARD W. ROOT
Southern Mgr.
Atlanta, Ga.

GORDON PETRIE
Western Mgr.
Portland, Ore.

DON L. STARK
Northern Mgr.
Appleton, Wis.

The South

Mr. Root, whose wife, Prudence, incidentally, is from Portland, Ore., have temporary Southern headquarters in their home at 937 Coventry Road, Decatur, Ga., a suburb of Atlanta. A boy, 8, and a daughter, 5, also share the abode with the Black-Clawson enterprises.

Mr. Root's territory extends from Texas to Virginia. Graduated from the State College of Forestry, Syracuse U. '35, Ted Root joined the Dilts Machine Co., Fulton, N. Y., in 1937. After service in the U. S. Navy as a lieutenant in the war on both Atlantic and Pacific Oceans (during which period he met his bride through the Petrie family introduction in Portland, Ore.), he returned to the Black-Clawson Co. to be sales engineer and later, manager, of its Dilts unit. The importance of the South in the eyes of President Cliff Crawford and others of the company was the reason for his assignment to that territory.

The West

Gordon Petrie, graduate of Oregon State College in electrical engineering, was an Army Signal Corps captain in the war. He joined Black-Clawson in 1948 after experience in the mills of Longview Fibre and Puget Sound Pulp & Timber on the Pacific Coast.

After training at the Hamilton, Middletown and Fulton plants, he returned west in 1950 to join his father. He gave his first technical paper before the National Supts. meeting in Portland, Ore., a year ago. He is married and will be in charge of all West Coast sales and service. A brother, Ross, is at the Crown Z mill in Camas.

The North

To Appleton has gone a native of that important paper city in Don Stark. He formerly covered Wisconsin, Northern Michigan and Minnesota as sales engineer but now is in charge of all sales and service and has opened an office temporarily located at 814 North Superior St. in Appleton. Thus, this makes the third regional office opened by this company in the important papermaking centers of the U.S.—Portland, Ore., Atlanta and Appleton.

The MORDEN SLUSH-MAKER Introducing... PULPER

- For PULPING
- For BREAKING
- For MIXING
- PRELIMINARY TREATMENT

The *Slush-Maker* pulper quickly and efficiently gives the initial disintegration to all pulps, brokes, or waste papers. In addition, through a hand-wheel controlled bar to bar setting, difficult flakes and bundles are readily brushed out of the stock, color and other additives mixed and brushed in, furnishes blended and, if desired, given a preliminary beating treatment, either on a continuous or batch basis.

The *Slush-Maker* completely defibers high wet strength papers, even in cold water, without damaging the fiber.

MADE BY THE MANUFACTURERS OF THE MORDEN "STOCK-MAKER"

MORDEN MACHINES COMPANY

PACIFIC BUILDING, PORTLAND 4, OREGON

Personals

MIDWEST NOTES

JAMES DAVIDSON, chief engineer of Minnesota & Ontario Paper Co., is back permanently at the Minneapolis headquarters of the company in Baker Arcade building after spending several months at International Falls, Minn. It has been found more practical to move the central engineering of the company back to the big city after a tryout at the Falls.

JERRY FALLON, young representative of J. O. Ross Engineering Co. out of the Chicago office in recent years, decided to go back to Northwestern University to study to become a lawyer. But he was welcomed back during the summer months by J. O. Ross, and may be with them again next summer.

ROBERT J. ZAUMEYER, former Lakeview (Wis.) mill manager for Kimberly-Clark, later in purchasing, then on the general superintendent's staff and recently in plastics sales for K-C, died at the age of 51 in Neenah, Wis. recently. He had been in poor health about 8 years. He was with Kimberly-Clark for 30 years in Niagara Falls, N.Y., Kimberly, Wis., and Neenah. He was born in Milwaukee and graduated from the U. of Wisconsin. During World War II, he served with WPB as chief of the technical section of the Paper Section.

EUGENE E. SCHNEIDER, a mechanical engineering graduate of Marquette University, has joined the power dept. of Nekoosa-Edwards Paper Co. Before coming to Nepco, Mr. Schneider was a boiler inspector with an insurance company in Milwaukee. Previously, he had been with Babcock & Wilcox in Ohio. A World War II veteran, Schneider was assistant engineer aboard a destroyer.

C.G.R. (Rusty) JOHNSON, who is assistant chief engineer, Staff Engineering, Kimberly-Clark headquarters, Nennah, Wis., and another "Rusty"—*R. J. LEROUX*, former Consolidated superintendent at Appleton, and now Weyerhaeuser mill manager in Everett, Wash., have celebrated their tenth and 25th wedding anniversaries together—the latter earlier this year in Wisconsin.

RICHARD L. HUBER has been named manager of the Cleveland office of the Cellulose Products Department of Hercules Powder Co. Cleveland will be an independent branch office. Up to now it has been under Detroit.

COLIN GARDNER III, vice-president, operations, of The Gardner Board and Carton Co., Middletown and Lockland, Ohio, announced today the appointment of *DU WAYNE R. CARLSON* as foreman of quality control at the company's lockland operations. He will assist B. E. Soy, chief of quality control.

Photos of Principals In Fox River Changes

Joseph P. Haberman (left), recently retired as superintendent of the Telulah Mill of the Fox River Paper Corp., after serving the Wisconsin rag mill for more than 45 years.

Mr. Haberman, who began his papermaking career

as a screen boy at Fox River, had been Telulah superintendent for 13 years.

As we reported last month, he has been succeeded by Arnold G. Beaman (left), who had been superintendent of the Fox River Mill of the corporation. Mr. Beaman left Detroit Sulphite Pulp and Paper Co. in 1941, where he was night superintendent, to join Fox River's technical staff as a chemist.

Alex Laux (right), who served under Mr. Haberman as assistant superintendent of Telulah Mill, is the new superintendent of the Fox River Mill.

SPENCER H. HELLEKSON, superintendent of the Milwaukee, Wis., plant of the Paper Makers Chemical Dept., Hercules Powder Co., has moved to the Savannah, Ga., plant as assistant manager. The Savannah plant is the largest operated by the PMC Chemical Division. E. Marvin Overby, Jr., assistant manager of Savannah, joined the administrative staff at the Hercules naval stores plant at Brunswick, Ga.

PAUL W. BARTHOLOMEW has been named technical director, Paper Division, of the Minnesota & Ontario Paper Co., International Falls, Minn. Mr. Bartholomew joined Mando at Minneapolis headquarters two years ago as assistant paper sales manager after 19 years' experience with Hawthorne Paper, Kalamazoo, and Hercules Powder Co., Wilmington, Del.

SINCE DEATH OF BOB HEUER on the Pacific Coast, Lester J. "Lefty" Smith, now manager at Gould Paper, is only living member of the Supts. Association who has chairmaned two divisions. Lefty had the title in NY-Canadian and Northwestern divisions. Mr. Heuer was chairman in both NY-Canadian and Pacific Coast.

HONOR FOR WALTER SOOEY

WALTER E. SOOEY (on right), Exec. Vice Pres. of The Gardner Board & Carton Co., Middletown and Lockland, O., receives 20 yr. pin from PRESIDENT E. T. GARDNER (left). Mr. Sooey began his career in 1907 at Michigan Carton Co., Battle Creek, Mich., becoming a Director and Secretary and was in charge of Engineering and Operations. He joined Gardner in 1931 as Plant Mgr. and rose to Exec. V. P. a year ago.

W. F. COOK has been appointed director of industrial relations for Kimberly-Clark Corp., with headquarters in Neenah, Wis. He has been the corporation's chief representative in all labor negotiations and succeeds to a vacancy created by the death of Ralph Kehl. Mr. Cook joined the K-C in 1928. After assignments at various Wisconsin mills, he left a position as a mill personnel superintendent to do staff work at headquarters on wage and salary administration. In World War II, Mr. Cook was in charge of industrial relations for the K-C Ordnance Division. In 1944 he was given dual responsibility of mill manager for Kimberly-Clark of Canada, Ltd., and personnel manager for Spruce Falls Power and Paper Co. Kapuskasing, Ont. Mr. Cook returned to Neenah in 1948.

THEODORE H. LAMERS, former pulp mill foreman at Kimberly-Clark Corp., Kimberly, Wis., has retired on pension and was honored at a dinner of 250 employes and families where *J. D. DOERFLER*, mill manager, *AL WILKENSEN*, production manager; *H. A. DUBOIS*, chief of Kimberly-Clark's sulfite departments from Nennah; *W. H. SWANSON*, PULP STAFF CHIEF, *A. C. McINTYRE*, supt. at Kimberly and others spoke.

DR. LAWRENCE ALLEN BOGGS has joined the technical staff of the Sulphite Pulp Manufacturers' Research League, Appleton, Wis. He is from the division of agricultural biochemistry at the University of Minnesota. He will head up a new research into wood sugars and their breakdown products, under Averill J. Wiley, technical director of the League. The sugar project will be tied in with the League's present long-term programs of chemical, microbiological, and physical research and development. Born 40 years ago in Spokane, Washington, Dr. Boggs is married. Mrs. Boggs will remain in Minneapolis while Dr. Boggs is house-hunting.

CLARENCE PAXTON, general superintendent of coaters and reels at the Hamilton, O., mill of Champion Paper & Fibre, and his wife, recently celebrated their 50th anniversary with four generations of their family and received numerous gifts from his associates at the mill.

WHY ARE MORE BRISTOL RECORDING GAUGES BEING USED THAN ALL OTHERS COMBINED?

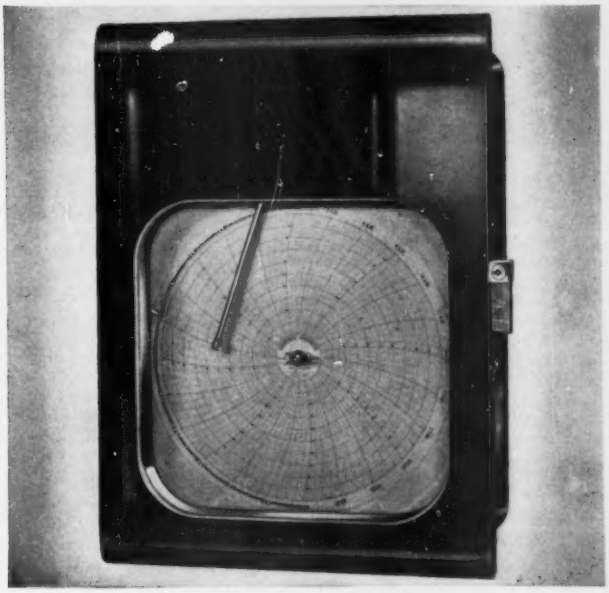
The heart of the pressure gauge is the pressure measuring element.

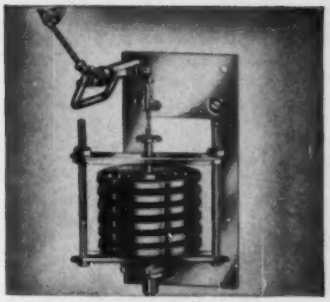
Hundreds of thousands of Bristol recording gauges in use all over the world, operating under all kinds of conditions, testify to the high accuracy, long life, and permanent calibration of Bristol's element.

Many Bristol gauges have been in constant service for 20, 30 and 40 years!

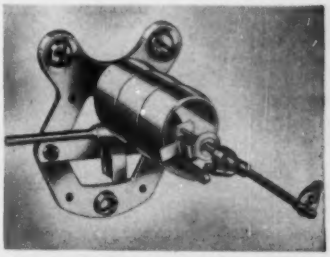
Now Bristol presents its *new* line of Series 500 recording pressure gauges in ranges from 0 to 6 millimeters mercury absolute to 0 to 10,000 psi. They have many outstanding new features which make them easier to use, convenient to service, readily convertible. And they incorporate the three most advanced designs of measuring elements.

Models are available for recording, automatic controlling, pneumatic transmission and telemetering. Immediate delivery on many ranges. Write for new 32-page Catalog G621. THE BRISTOL COMPANY, 142 Bristol Road, Waterbury 20, Conn.

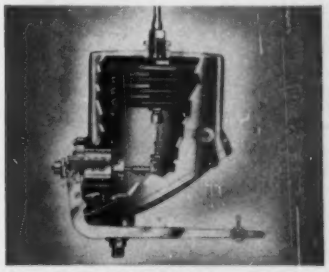




FOR LOW PRESSURE RANGES—new Type E measuring element is used for ranges from 0-2 in. water to 0-29.9 psi pressure or vacuum. Extremely high torque gives positive pen positioning across entire range. Highly accurate, extremely stable. 250% inherent over-range protection.



FOR INTERMEDIATE AND HIGH RANGES—new helical measuring element is for ranges from 0-30 psi to 0-10,000 psi. Special nonferrous alloy—heat-treated to withstand impact of rapid fluctuations—gives permanent accuracy over a long period of service life.



FOR ABSOLUTE PRESSURE—new single-bellows type element measures ranges as low as 0-6 mm. mercury absolute and gives direct reading of pressure above absolute zero inherently corrected for barometric variations—with far greater accuracy than ever before.

THE DEPENDABLE GUIDEPOST OF INDUSTRY

BRISTOL

News and Notes from ▣ ▣ ▣

EQUIPMENT AND SUPPLY COMPANIES

IN NEW CHICAGO POSTS

E. L. CROWLEY (left), formerly in charge of Bleach Plant at The Northwest Paper Co., for many years, resigned from his position at Cloquet, Minn., as we reported last month, to move to Chicago, where he is Assistant to Jim Kuhn, Mgr. of Pulp & Paper Division of Infilco, Inc. (232 West 25th Place), water treatment engineers.

R. T. KIDDE (right), who has been promoted to General Sales Mgr. of all divisions of Hills-McCanna Co., in Chicago. He has long been their specialist in Pulp and Paper field.

CENTRAL ATLANTIC DIVISION OF REICHHOLD CHEMICALS, INC. in Charlotte, N.C., near completion, will have a capacity of over 1,000,000 gallons of urea and phenolic resins per month—said to be the largest in the South—and designed specifically for use in the forest products industries. Heading manufacturing and sales is H. R. Helbig, named to manage the plant following six years in technical and sales departments in Reichhold's main quarters in Detroit. With him are Dieter Reichhold and Vern Bergquist in sales; Peter Dorney, project enginer; George Hammer, plant manager; and Jos. Miller, Wm. Buchanan and Richard Porter, technical service. Mr. Helbig says it is Reichhold's aim, not only to make materials in a Southern plant for Southern use, but to provide complete technical service. The laboratory is to have full equipment for duplicating plant conditions for testing and development. Reichhold's Charlotte plant is its second in the South, (the first in Tuscaloosa, Ala.) and its ninth in the U.S., and a plant now building in Montreal will be its third in Canada. . . .

NATIONAL ALUMINATE CORP., 6213 West 66th Place, Chicago 38, Ill., has issued three new technical bulletins on Nalco ion exchange materials. A separate bulletin covers each of three Nalco exchangers: Nalcite HCR, a styrene type cation exchanger; Nalcite SAR, a strongly basic anion exchanger; and Super Nalcolite, a synthetic gel type zeolite for cation exchange. Copies are available by writing to National Aluminate and requesting Bulletin 57 (Nalcite SAR), Bulletin 58 (Nalcite HCR), or Bulletin 59 (Super Nalcolite). . . .

FULLER CO., Catasauqua, Pa., has issued Bulletin C-6, "Fuller Rotary Compressors and Vacuum Pumps," latest publication on this equipment. . . .

YARWAY Bulletin WG-1811 (1951) on steam plant equipment replaces the 1948 edition, issued by Yarnall, Waring Co., Mermaid Lane, Philadelphia 18, Pa.

GENERAL ELECTRIC CO. has issued a new bulletin describing electric drives for paper stock preparation now available from the G. E. Company, Schenectady 5, New York. Designated as publication GEA-5556, the eight-page bulletin outlines the benefits of G-E drives for pulpers, beaters, refiners, pumps, and other stock preparation apparatus. . . .

AMERICAN BITUMULS CO. and Stancal Asphalt & Bitumuls Co. have formed a single, national company under the name of American Bitumuls & Asphalt Co., having the collective manufacture and sales facilities of fourteen district offices and factories in U.S. and Puerto Rico. The company manufactures emulsified asphalts under the trademark of "Bitusize," known in the paper and board industry for waterproof sizing and adhesive extender agents. Executive offices remain in San Francisco. E. M. Lorenzini, manager in charge of their Bitusize operations, maintains headquarters in Chicago. . . .

RICE BARTON CORP., Worcester, Mass., one of the nation's pioneer manufacturers of papermaking equipment, has introduced a new trademark for identification of its products. Now in its 114th year, the company had previously used only a seal as its insignia. The new trademark (see reproduction), which will be used on business forms and equipment, is built around the symbol of rolls and sturdy frame, to represent papermaking machinery, and horizontal line, to represent paper. President of the company, which was founded in 1837, is Charles S. Barton. . . .

ALLIS-CHALMERS package pumps engineered for a wide range of fractional horsepower applications, including air conditioning, in capacities to 80 gallons per minute at heads to 100 feet are described in a new bulletin. Copies of "Allis-Chalmers Package Pumps," 52B7529, are available upon request from Allis-Chalmers Mfg. Co., 995 S. 70th St., Milwaukee, Wis. . . .

SAMUEL C. ROGERS & CO. has produced an extra-heavy duty knife grinder of the new "220 series" grinders, designed to precision grind doctor blades, paper knives, heavy duty chipper knives and shear blades up to 210 inches length. It is adaptable for flat faces and straight edges. Its cabinet base is 30 feet long and the machine weighs 10½ tons.

For further information, write Samuel C. Rogers & Co., 183-201 Dutton Ave., Buffalo 11, N.Y. . . .

IN INDUSTRY NEWS

WILLIAM A. WHITE, JR. (left), Asst. Chief Engineer, Shartle Brothers Div., Black-Clawson Cos., Middletown, O., recently was for a time at Fiskeby Fabriks, a mill near Norrkoping, Sweden, assisting in design and layout for a new 140-in. cylinder board machine and Shartle-Dilts Hydrafiner system.

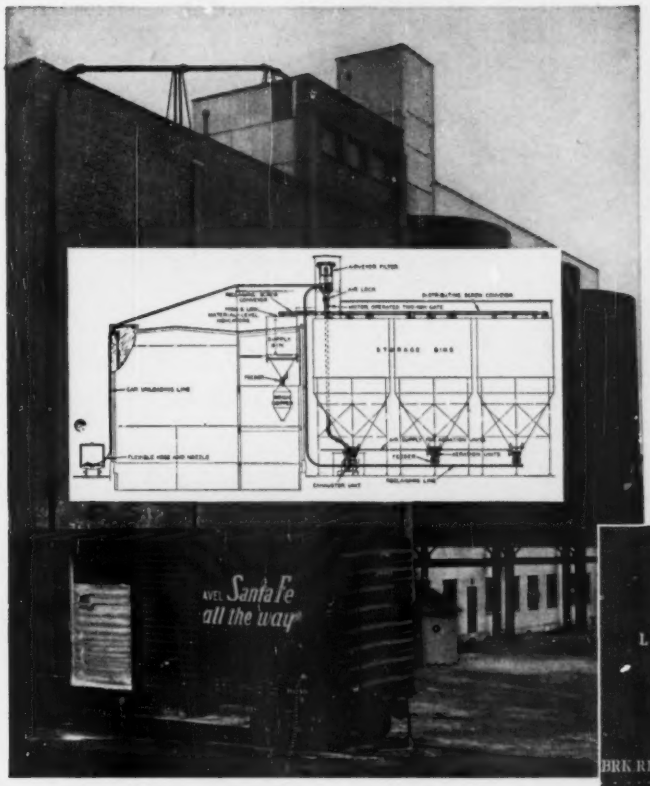
HENRY J. FARRA (right) Sales Engineer with The Moore & White Co. since 1947, has been named Sales Mgr. for the Philadelphia manufacturer of papermaking machinery. He went to Moore & White from Lobdell Co. where he was head of paper machinery sales. He was 30 years with Pusey & Jones and during war was with Hercules Powder engineering.

SMITH & WINCHESTER MFG. CO., who for years have built Tuber and Bottomer type of machines for single and multiwall bags, pioneered in the gusset type multiwall sewed valve type bag machine, have improved the machines as speeds and types of bags have been called for. Smith & Winchester have shipped two of a new design Multiwall Paper Bag Tubers for making multiwall sacks for either the sewed gusset type or flat pasted bottom type bags. . . .

THE JOHNSTONE ENGINEERING AND MACHINE CO., Parkesburg, Pa., manufacturers of slitting and roll winding equipment, has just completed the first phase of its expansion program with the construction of a modern addition to its present plant. The building has a 169-foot front, constructed of brick and reinforced concrete. The remainder of the building is of concrete-block and steel construction.

A NEW LINK-BELT 44-page Book No. 2410 on coal and ash handling equipment for power plants, has been published by Link-Belt Co., Chicago, and is now available for distribution. The book contains helpful layout drawings and interesting photographs of actual installations, ideas and suggestions for solving the coal and ash handling problems of today's power plants. . . .

LOBDELL UNITED CO. announces appointment of J. G. Wells, Jr. as Sales Manager for the company, in Wilmington, Del. headquarters. Mr. Welis who joined Lobdell United in 1946, will have charge of sales of all its products both to paper and other industries.



if it's pulverized, convey it pneumatically

The AIRVEYOR goes to work for the New York & Pennsylvania Company

Problem: To install a conveying system for coating clay that would match the efficiency of the expanded and modernized plant at Lock Haven.

Solution: Pulverized coating clay, with a moisture content of not over 3 per cent, is pneumatically unloaded from box cars and conveyed to the Airveyor filter for delivery to any one of three storage bins, or direct to a supply bin above a weigh hopper. Unloading rate is 10 tons an hour. The same system reclaims clay from the storage bins and delivers it to the supply bin—by remote control from a centrally located panel board. Provision is made for automatic return of clay to the storage bin, from which it is being conveyed, when the supply bin is full, or to any bin in any sequence when unloading from cars.

If handling of dry, pulverized materials is a major problem to you, look to Fuller for the most economical and practical solution. Fuller specializes in pneumatic methods of materials handling. Today, the Airveyor, and other Fuller Systems, are cutting handling costs, and materially increasing operating efficiency in hundreds of installations. To have a Fuller Engineer survey your present system and make recommendations for modifications places you under no obligation whatever. It's more than likely that the results of his study will point your way to more efficient materials handling at lower operating and maintenance costs.

FULLER COMPANY, Catasauqua, Pa.
120 S. LaSalle St., Chicago 3 • 420 Chancery Bldg., San Francisco 4

fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—
COMPRESSORS AND VACUUM PUMPS—
FEEDERS AND ASSOCIATED EQUIPMENT

A-112

BATHURST CO. MAKES APPOINTMENTS

Bathurst Power & Paper Co., with mills at Bathurst, N.B., Canada, announces staff appointments (l. to r.): JOHN A. HANNA to Assistant Mgr. of Operations; W. CLYDE BAGGS to Mill Mgr.; GORDON F. ALLO to Manager of Boxboard Department; C. VINCENT CALLAGHAN to Process Engineer; ROBERT J. KESWICK to Kraft Mill Supt. Announcements were made by GORDON CHALMERS, Administrative Vice Pres. Mr. Hanna has been Mill Mgr. at Bathurst since 1943; was with the company 25 years. Mr. Baggs was with International Paper up to 1938 and was Bathurst Asst. Mill Mgr. Mr. Allo was with Bathurst since 1945, when he was made control superintendent, Mr. Callaghan since 1939 and Mr. Keswick for 14 years.

Personals

CANADIAN NOTES

A. M. STEVENSON, foreman of the Kimberly-Clark mill in Kapuskasing, is also the mayor of that bush country paper mill town, and so he was in charge when Princess Elizabeth of Britain and her consort, the Duke of Edinburgh, visited there. They spent an hour and a half touring the paper mill and the duke showed keen interest in the process.

CHARLES H. SAGE, president of Spruce Falls Power & Paper at "Kap" and vice president of Kimberly-Clark, also was a leading participant in the little town's welcome to royalty and he was the official host at the mill, of course.

DON BURRUS has now taken over as acting manager of Canadian Ingersoll Rand Co.'s pulp and paper division, Montreal, handling Bird Machine equipment in Canada, now that *JAMES A. STENSTROM* has left there to be sales manager of the new Celanese chemical plant in Edmonton, Alberta, which will process pulp from the new Prince Rupert (Watson Is.) pulp mill. Jim Stenstrom is a son of *D. G. STENSTROM*, west coast representative of Columbia Cellulose Co.

JOSEPH M. CUNNINGHAM has been appointed manager of operations, B.C. Bridge & Dredging Co., Vancouver, B.C. Recognized as a leading authority in the heavy construction business in Canada and the U.S., he was vice president of James Stewart & Co., of New York, Chicago and Dallas before going to the west coast.

HAROLD S. FOLEY, president; *M. JOSEPH FOLEY*, executive vice president; and *G. W. O'BRIEN*, vice president, top executives of Powell River Co., Vancouver, B.C., visited the Crown Zellerbach Corp. operations at Camas, Wash. in late October observing the plant's newer developments.

MICHAEL CROMBIE, son of *HUGH CROMBIE*, vice president of Dominion Engineering Works, Montreal manufacturers of paper machines, was chokerman at one of the H. R. MacMillan logging camps on Vancouver Island the past summer. When the time came for his return to McGill University he hitch-hiked across the continent.

Nyman Moves West

Ben Nyman, inventor of the Swenson-Nyman washer, who retired a few years ago after acquiring a 1400-acre ranch at Falkland, B.C., has sold that place and purchased a smaller place on Vancouver Island.

New B & W Boiler For Pacific Mills

A 75-ton Kraft chemical recovery unit has been purchased by Pacific Mills, Ltd., Ocean Falls, B.C., from Babcock & Wilcox Co., according to announcement to PULP & PAPER by President Paul E. Cooper.

The new unit will be adjacent to, and operate in conjunction with, the existing 120-ton B & W Tomlinson recovery unit installed in 1938. Estimated cost of the project is $800,000. Construction will be started next summer. The new unit will consist of a water-cooled furnace, a two-drum Stirling boiler, superheater and air heater.

New Zealand Booklet

A new quarterly "March of Pine," published by N.Z. Forest Products Ltd., is a 24-page house organ is designed to interest friends, business associates and investors as well as the growing army of employes. Its initial circulation is nearly 5000. Editor is Clive Tidmarsh.

CANADIAN NOTES

British Columbia Wage

A new basic wage rate of $1.40 an hour has been established for British Columbia's pulp and paper industry following several months of negotiation. Most operations are on 42 hr. week.

More Sulfur in Canada

A $2.5 million expansion program to boost production of sulfur has been started by Nichols Chemical Co. with a view to doubling capacity of its plant in Valleyfield, Que.

MacMillan To Have Biggest Coast Kraft Mill

When the H. R. MacMillan Export Co.'s bleached Kraft pulp mill at Harmac, Vancouver Island, is brought to double capacity in 18 months expansion it will produce 570 tons daily and rank as the largest of its type in the West.

LaTuque Expansion

A $3 million expansion and improvement program is currently under way at the LaTuque, Que., sulfate pulp mill of Brown Corp. Two new digesters are being built by Dominion Bridge. Link-Belt is supplying a chip elevator. Three lines of Sherbrooke washers and knotter screens are being installed. Bale conveying equipment is by Lamb-Grays Harbor.

Spraying in East Canada

President Vernon E. Johnson of New Brunswick International Paper Co. announces his company is sharing cost with Canadian and New Brunswick in DDT spraying to combat insects in province forests containing enough wood to supply for seven years one of Canada's largest newsprint mills.

Mature timber in the 250 square mile stand totals 2,000,000 cords, with which the Dalhousie mill of NBIP could produce nearly as many tons of newsprint.

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BIG
PULPSTONES
. . . OR LITTLE ONES

Norton Can Furnish You with Exactly The Right Stone for Your Needs

Whether your grinders are husky 5000 horsepower jobs that take giant stones like the world's largest above, or smaller 100 h. p. grinders that take stones like the 40" diameter at the right, you can be sure that Norton can furnish a stone that's *exactly* right.

And it will not only be right in size but also in the type of abrasive and the grit size and spacing to produce from your wood the exact kind of pulp that you require.

What's more, Norton engineering service is available to help you select the right stone specifications to meet conditions in your mill.

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Norton Company of Canada, Ltd., Hamilton, Ontario

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Making better products to make other products better

Abrasives · Grinding Wheels · Grinding and Lapping Machines · Refractories · Porous Mediums · Non-slip Floors · Norbide Products · Labeling Machines

Sulfite Evaporation

NEW REPORT ON SWEDISH OPERATION

A Sequel to Curt Rosenblad's Article

Harold E. Jacoby (shown in picture) whose observations on Swedish operations in the evaporation of sulfite spent liquor are presented exclusively on these pages of PULP & PAPER, is a sales engineer in the Process Equipment Division of General American Transportation Co., and has been devoting his time to these problems since 1938.

Mr. Jacoby recently returned from more than a months trip abroad, the sole purpose of which was to study the Swedish methods of evaporation of calcium base sulfite spent liquor, and to relate these methods to U.S. requirements. He discussed his findings at a meeting of the Institute of Paper Chemistry in Appleton, Wis., Sept. 18, and later prepared this summary of his experiences at the invitation of PAPER & PULP.

Mills visited by Mr. Jacoby in Sweden included Mooch Domsjo at Ornskoldsvik and Hornefors; Cellulosa A/B at Utansjo; Stora Koppersberg at Skutskar and Kvarnsweden; and Holnenbruk Fabrikat at Loddby.

Mr. Jacoby's article is a fitting sequel, with more recent data, to a previous exclusively prepared and illustrated PULP & PAPER article by Curt Rosenblad, now resident of Princeton, N.J., whose Stockholm company developed the switch system evaporation system now licensed in the U.S. to General American. Mr. Rosenblad's article, "Swedish Mills' Experience—Evaporating and Burning Sulfite Liquor," was published in the Sept. 1950 issue of PULP & PAPER, page 63. In March 1950, page 36, PULP & PAPER published the first exclusive report on Appleton, Wis., tests with a Rosenblad evaporator, sponsored by the Sulfite Manufacturers' Research League.

By Harold E. Jacoby

Process Equipment Division, General American Transportation Co.

With the growing necessity for disposal of sulfite spent liquor in the U.S., a study of existing experience in the evaporation of this liquor is obviously desirable. While future developments may point the way to other means of disposal, at the present time, evaporation is the most practical first step. Since Swedish practice has now developed over the last six years, a study of Swedish evaporator operation should reveal many points of interest.

Contrast of Swedish and U.S. Requirements:

A. *Swedish Requirements*

1. The principal Swedish interest in the evaporation of sulfite spent liquor is the recovery of the fuel value therein. Since coal or other fuel is highly expensive practically all units installed produce a liquor concentrated sufficiently to serve as an auxiliary fuel. For example, a typical mill will recover 60 per cent of its digester liquor and produce therefrom 35 per cent of steam requirements.

2. Water pollution is not a serious problem due to the general location of mills at seaboard. Fly ash resulting from liquor burning has not become a significant nuisance, possibly because of the small size of communities adjacent to mills.

3. Since 6-day week operation is normal, operating problems are simplified and equipment requirements can be viewed in the same light.

4. There is a trend towards so-called "pressure evaporation" whereby the evaporator becomes a reducing valve in a live steam system to produce low pressure steam for utilization elsewhere in the mill.

B. *U. S. Requirements by Contrast*

1. U.S. problem is essentially one of pollution abatement. Today some mills are required to reduce water pollution by 40 per cent, but it is necessary to keep in mind the possibility of more stringent future restrictions. Furthermore, there is a general agreement that air pollution will be a serious consideration.

2. Since domestic fuel is cheap by comparison with Swedish costs, there is great difficulty here in justifying capital expenditure for heat recovery.

3. *Station Switching* (*See Figure II*), whereby the whole evaporator is reversed by means of paired valves in incoming and outgoing streams. In this method, the complete liquor system is periodically switched with the complete steam-condensate system thus subjecting all surfaces and all equipment to the washing action of condensate and thereby removing scale from all parts of the evaporator. It presents the further advantage of reducing the number of operating valves in any multiple effect system. All new Swedish installations have adopted this method for obvious reasons. For the above reasons, this method of operation is adaptable to U.S. requirements of continuous operation.

Temperature Limitations:

The most frequent operating conditions encountered with respect to pressure is the use of exhaust steam in the neighborhood of 35 p.s.i. gauge. With this initial pressure and a condenser to develop a

FIGURE ONE

INDIVIDUAL EFFECT SWITCHING DOUBLE EFFECT

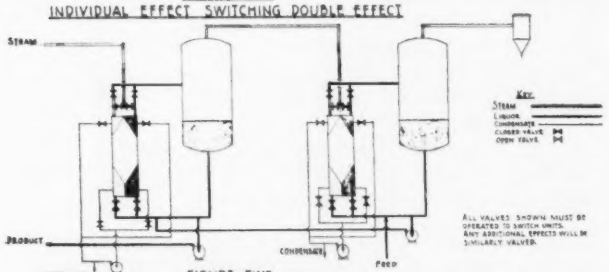
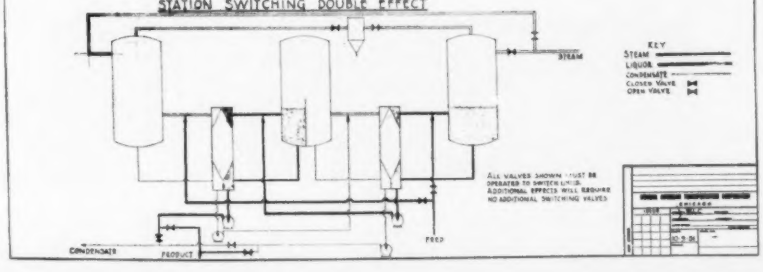


FIGURE TWO

STATION SWITCHING DOUBLE EFFECT



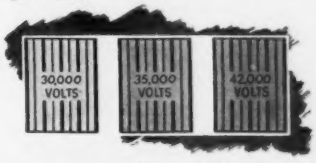
These 10 BIG Features Make Western Precipitation COTTRELLS Outstanding in the Paper Industry

When considering COTTRELL Equipment for salt cake recovery, or any other application in the paper industry, remember this . . . *Western Precipitation Corporation not only pioneered the first commercial application of* COTTRELL *equipment made in any industry, but also pioneered the first application of* COTTRELL *equipment in the paper industry.*

Among the vitally important advantages found in Western Precipitation COTTRELLS, the following are particularly important in paper mill installations ...

1 Sustained Year-After-Year Efficiency: The recovery efficiency of Western Precipitation COTTRELLS does not fall off in service. All parts are of ample design to maintain guaranteed over-all efficiency year-after-year —not for just a single acceptance run.

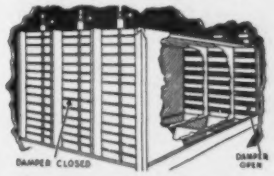
2 Higher Recovery: The horizontal flow design of Western Precipitation COTTRELLS eliminates collected material falling countercurrent to incoming gas stream. This assures higher recovery, minimum resuspension of recovered material in gas stream.



3 Maximum Performance: Horizontal flow of Western Precipitation COTTRELLS permits use of multiple electrical sections so that voltage in each section can be varied to dust loading for maximum recovery without arc-over or electrical breakdowns.

4 Lower Over-all Cost: When comparing COTTRELL costs, be sure to compare total *installed* cost, including duct work.

5 Simpler Maintenance: Because all interior parts and electrode systems are readily accessible, Western Precipitation COTTRELLS are far easier to maintain and service. Saves "down" time, saves repair costs.



6 Greater Adaptability: Horizontal flow design permits use of multi-vane dampers in multiple-unit installations. Thus, one unit can be shut off completely to permit maintenance operations without closing down entire Precipitator. Also, the dampers can be used in slightly-closed position to assure more uniform gas distribution. On single-unit installations, chain curtains assure uniform distribution of gases. Curtains are easily kept clean by shaker mechanisms provided.

7 "V"-Shaped Hoppers: Horizontal design permits use of continuous "V"-shaped hoppers for collecting recovered material. Steeply-sloped walls in this type of hopper prevent build-up or bridging of recovered material.

8 Space-Saving Compactness: Not only do their horizontal design permit maximum compactness in Western Precipitation COTTRELLS, but various sections of a unit can be arranged for indoor installation in space above cascade evaporators, thus utilizing space otherwise wasted.

9 All-Weather Construction: Western Precipitation COTTRELLS are built for both indoor or outdoor installation, and this organization has had extensive experience with special construction to prevent excessive corrosion in rigorous northern climates.

10 More Extensive Experience: Since pioneering the commercial application of COTTRELL Precipitators over 42 years ago, Western Precipitation has consistently led in developing one unique advancement after another. Such features as 4-Point Electrode Suspension that eliminates misalignment of electrodes and reduction in recovery efficiencies . . . Unusually Rugged Rapper Design that assures proper cleaning of electrodes . . . Extensive Experience with all types of electrode designs . . and many other advantages assure you the ultimate in COTTRELL design and efficiency when you bring your recovery problems to Western Precipitation engineers.

Without obligation our nearest representative will gladly make Western Precipitation COTTRELL *experience available to you for solving your particular recovery problem. Why not contact him today?*

IMPORTANT! In addition to COTTRELL Electrical Recovery equipment, Western Precipitation Corporation also designs and installs the well-known MULTICLONE Mechanical Collectors for hogged-fuel fired boilers. These units are unusually compact, highly efficient and can be readily fitted into existing plants at minimum installation costs. Write for details!

Send for Helpful Literature

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vacuum of approximately 25 in. Hg., a suitable range of temperature differential is imposed across the evaporator permitting quadruple or quintuple effect operation. A number of Swedish installatins operate under these conditions and their operation is uniformly excellent. The only operating problem is that of scale and its successful elimination has been described above.

There are however, three evaporators in operation which employ live steam (up to 150 psi gauge) at the evaporator first effect and release vapors at 10 to 15 psi gauge from the last effect for use elsewhere in the mill. A study of the operation of these units reveal a significant difference compared with exhaust steam-vacuum installations. Those effects which are subject to pressures in excess of approximately 40 psi (290° F.) develop in addition to gypsum scale a black carbonized organic deposit which cannot be removed by condensate washing. This deposit can be removed by boiling with nitric acid. The frequency of such treatment varies but will range anywhere from once a week to once every three months. While this problem is receiving serious attention in Sweden, it has not been solved. The cost of equipment for acid handling, the cost of nitric acid itself and the lost time involved in cleaning indicate that for the time being pressure evaporation should not be employed in U.S. practice. Particularly in ammonia base, which is highly senstitive to heat, would such an operation be unwise.

3. Equipment must be so designed that 7-day per week operation is achieved. In the light of what follows this is of unusual significance.

Since equipment in the U.S. must run continuously, how close to this requirement could Swedish equipment come if it had to? What operating problems exist which might prevent it? In short, what are the limitations of evaporator operation?

Types of Swedish Equipment:

The primary problem governing evaporator design is the control of gypsum scale. Swedish equipment for this service falls into two categories, both of which depend on dissolving scale by means of an acid condensate wash.

(a) Forced circulation types with provision made for cutting out part or all of the equipment for periodic cleaning, thereby necessitating reduced capacity during cleaning.

(b) Channel switching types (Rosenblad System) which continuously clean the surface by means of a periodic exchanging of the boiling liquor side with the condensing vapor side of the system.

Previous reports have described early Swedish installations (PULP & PAPER, Sept. 1950, by Curt Rosenblad). Briefly summarizing, the forced circulation types present no novelty insofar as U.S. experience is concerned—necessity for spare equipment or capacity losses, excessive power requirements and other operating weakness have resulted in an almost universal discarding of the forced circulation method in Sweden leaving the channel switching method as the type employed in all recent installations.

Channel Switching Types:

There are two distinct types of channel switching evaporators:

1. Individual Effect Switching (*See Figure 1*), where, by suitable duplicate valves, the liquor side and steam side of each heating element may be switched. This method permits cleaning of heating surface only. It leaves the vapor body, piping, pumps and valves subject to scaling

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and requires periodic shutdowns to clean this equipment. Frequently, such cleaning must be mechanical. As a consequence, individual effect switching does not lend itself to 7-day week continuous operation.

Concentration Limitations:

Swedish mills, which are burning their liquor, concentrate it to at least 55 per cent solids and usually slightly higher. It should be here noted that refractory furnaces are employed and the so-called "Loddby" furnace (cyclone type) is becoming generally accepted. Experiments with varying concentration have shown that while the liquor will burn with this type of furnace at as low as 42 per cent solids, 55-57 per cent solids represent the most practical concentration. Briefly, 50 per cent solids was not good enough and 50 per cent solids occasionally introduced transfer and pipe line troubles, particularly related to shutdowns. For satisfactory continuous operation, an end concentration of at least 55 per cent seem indicated for refractory furnace operation burning calcium base liquor. Water-walled furnaces will apparently require concentrations considerably in excess of 55 per cent.

Maintenance:

Aside from the scaling problem, maintenance of evaporators presents no greater and no less a problem than evaporator applications of a more standard nature. Centrifugal pumps, both of standard and non-stuffing box type are successfully employed. Remote control of operating valves is found, but manual operating of reversing valves is normal. Type 316 stainless steel is the standard material of construction although in one instance at least, brick lined carbon steel vapor bodies are incorporated in design. With operation of some units now covering six years it can safely be said maintenance is not a serious problem.

Conclusion:

Experience of Swedish practice in evaporation of calcium base spent sulfite liquor indicates successful results can be achieved under conditions prevalent in the U.S. Station switching of the Rosenblad type of channel switching evaporator will permit 7-day per week operation within proper temperature and pressure limitations. Further, with refractory type furnaces a product liquor concentration can be readily achieved from this type of natural circulation machine which will give good combustion. Materials of construction are standarized and maintenance is normal.

Cold Weather News

A note from Rhinelander, Wis., to the editor reported that in the recent cold snap, the thermometer dropped from 55 degrees above zero to 5 degrees below overnight!

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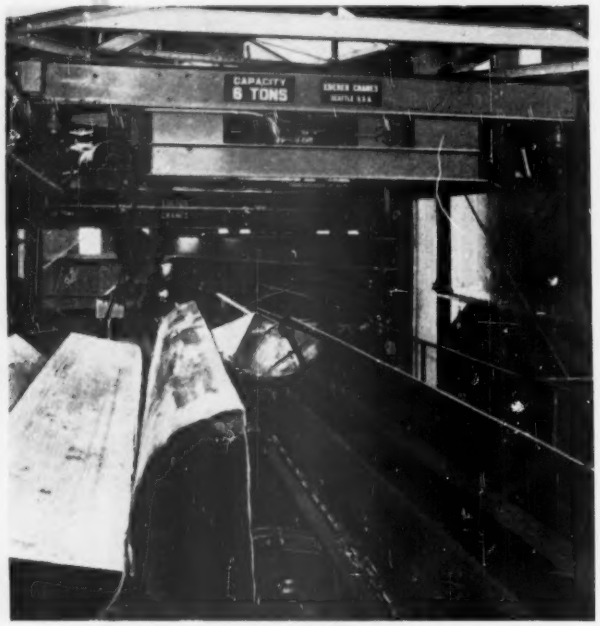

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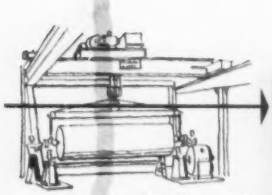

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Personals

SOUTHERN NOTES

CECIL B. CURRY, the new chairman of the Southeastern Supts. Division, was born in what is now a lumber "ghost town"—Lanesville, West Va., so he knows the meaning of pulpwood regeneration and long term planning of the pulp industry. He went to high school in Sylva, N.C., went to work for Mead in Lynchburg where he got a degree in engineering in night school. He married Eloise Crawford, daughter of *C. A. CRAWFORD*, digester cook at Sylva. Mr. Curry's career took him to Union Bag, to St. Mary's and now he is pulp supt., National Container, Big Island, Va., where he has been since '41. The Currys have a daughter, 13.

LUD E. KING, Louisiana State forestry graduate and recently with the Southern Pulpwood Conservation Association, is new division forester for Champion Paper & Fibre Co. at Huntsville, Texas. His job is a far cry from his wartime service, when he commanded a navy minesweeper, usually without a tree in sight.

JOHN J. THOMPSON, the new chairman of the Southern Supts., is a Texan by birth, son of a Gilman, Tex., farmer. He went to high school and grew up in Grayson, La., and when the famous pioneer mill at Bastrop, La., started up he went to work there. He went to six more Southern mills on a trail that led to St. Mary's and, finally, eight years ago, back to Texas. He is Southland's pulp supt. He married the former Ethel Buford and they have two sons.

C. S. HEUSTIS, who is manager of containerboard production for Robert Gair Co. Inc., who have several plants in U. S. and Canada, is better known as "Bill." He made a lot of new friends at the Savannah and Jacksonville meeting, many of them through his colleague, Plant Mgr. *CHARLES McCARTHY* of Gair's Southern Paperboard mill. "Bill" Heustis is a graduate of the University of Maine and was a former mill manager at Uncasville, Conn., before Gair pulled him into head offices in New York.

PAGE SANDERS JR. has been named Nashville representative for The Rowland Paper Co., Inc., 402 Sudekum Bldg., Nashville, Tenn., distributors for Champion and other mill brand papers.

R. S. HATCH, formerly research director of Weyerhaeuser Timber Co. Pulp Division and lately living in Monterey, Cal., has been engaged by Hudson Pulp & Paper Co., Palatka, Fla., to organize a research department for the organization. His project started Nov. 1, and is expected to be concluded in 6 to 12 months.

CHANDLER H. JONES has been named sales manager of National Container Cor-

Personals

SOUTH (Cont. from p. 104)

poration's corrugated box plant in Dallas, Texas, according to Lionel M. Goldberg, vice president.

W. H. BRYDGES, trustee and past president of the Mill Superintendents Association, is convalescing rapidly at his home in Lynchburg, Va., from his recent illness. For some days, he was hospitalized at the Virginia Baptist Hospital in Lynchburg where he underwent surgery.

GUICE KINCHELOE, shipping agent for Crossett Paper Mills, Crossett, Ark., won the $250 prize for providing the title "TRAIL BLAZER" for the No. 1 paper machine. The new light weight kraft machine is named "PIONEER," *JOHN GILLEDGE* having won the prize in a contest held a year ago.

ROBERT W. McDERMID, supervisor of forestry for Champion Paper & Fibre Co., at its Huntsville, Texas, office, resigned to join the Louisiana State University's forestry school staff.

WILLIAM A. DUERR, forest economic division chief at Southern Forest Experiment Station, New Orleans, for the past six years, has been transferred to Washington, D.C., for special studies. He has been succeeded by *PHILIP R. WHEELER*, who had served as chief of the Station's forest management division.

W. M. CARTER, vice president of Gaylord Container Corp.'s Southern Division, has been named a director of Louisiana Bank & Trust Co., New Orleans, where he resides.

C. I. PETERSON has been named Tennessee State Forester, succeeding J. O. Hazard, who retired.

U. J. WESTBROOK, general superintendent of St. Regis kraft center, Pensacola, has been named to the Pensacola (Fla.) Community Chest budget committee, and is a director.

C. C. MacPIKE, St. Regis Paper Co. safety director at Pensacola, has been serving as one of a 10 member safety advisory committee for the Florida Industrial Commission.

DR. KARL R. KARLSON will be in New Zealand for two years helping to build a paper mill for Perkins-Goodwin. He was formerly associated with Florida Pulp & Paper mill, Pensacola, Fla.

AL BARKLEY, from Minnesota & Ontario Paper Co., International Falls, Minn., has joined Union Bag & Paper Corp.'s construction engineering department in Savannah carrying out an extensive expansion program there is in charge of the estimating, expediting and priorities section of production.

JOHN T. HARRISON, manager of Union Bag & Paper Corp., Bag Division, Savannah, has become manager of the Union Bag box plant in Chicago.

V. E. KELLY, assistant to Mr. Harrison in Savannah, became bag factory manager there, with *FRED E. KNEIP* promoted to assistant.

New Ecusta-Olin Operating Organization

A new operating organization for Ecusta Paper Corp., subsidiary of Olin Industries, Inc., is announced by John M. Olin, president of Olin and John Wesley Hanes, Olin vice-president and president of Ecusta.

Norman H. Collisson, Ecusta vice president, was appointed general manager of the Olin Cellophane Division. Lawrence F. Dixon, executive of Ecusta and its affiliates for many years, was appointed general manager of the Ecusta Paper Division.

Cellophane Division executives: Milton L. Herzog, production manager; James L. Spencer, sales manager; E. Hartshorne, research and development manager; and E. L. Lynn, quality control manager. Executives of the paper division: Lee M. Bauer, production manager; R. E. Mathews, sales manager; Milton O. Schur, research and development manager; and R. L. Hooper, quality control manager.

J. E. "DUSTY" RHOADES, Ohio-born, who started in the Hamilton mill standards department, has been appointed manager of Champion Paper & Fibre's clay plant at Sandersville, Ga. He has been assistant manager since 1943.

Volney Mill in Texas

Production of felt paper for roofing is expected from the new Volney Felt Mills, Inc., about April 1952. The new unit is at Irving, Texas, and will produce 80 tons daily with an 144-inch trim cylinder machine.

Pensacola Machine

Bagley & Sewall Co. has started shipment of the new 2000 FPM 228-inch Fourdrinier machine to the St. Regis Paper Co. at Pensacola, Fla. Kenneth Baxter is erection engineer for the manufacturer.

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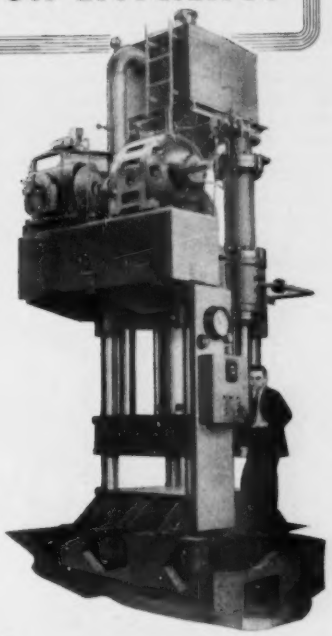

The 1,000-ton rapid traverse pulp baling press shown at right is one of two recently delivered by Washington Iron Works to a major West Coast pulp plant. They are completely automatic, with advantages in speed, ease of loading and efficiency of operation.

Specialized experience, integrated manufacturing facilities and centralized responsibility—applied to both standardized and custom-built equipment for logging, pulp and paper, plywood and hardboard production.

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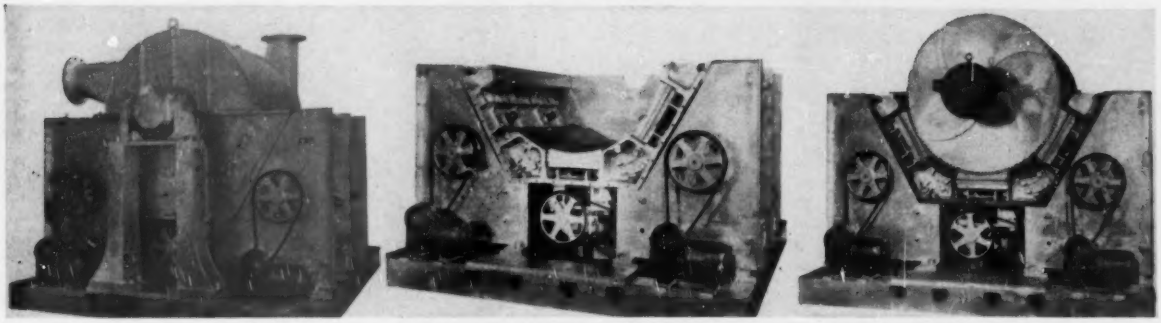
NEW MIDWEST-SMITH AUTOMATIC CONTINUOUS BEATER



VIEWS OF THE NEW MIDWEST-SMITH AUTOMATIC CONTINUOUS BEATER. LEFT: End view with stainless steel top housing in place. Inlet nozzle on right, discharge nozzle on the left. Beating cycle 1 to 3 minutes. Capacity 50 to 100 tons. MIDDLE: End view showing two bedplates in position, one bedplate and roll removed. RIGHT: Entire bedplate and roll assembly in operating position. 44,509,500 sq. in. of contact surface per minute with roll at 157 R.P.M. Several times that of other types of refiner equipment.

A radically different type of beating and refining equipment has been produced at Midwest-Fulton Machine Co., Dayton, O., builders of Fulton dryer drainage systems, and is being introduced in a large kraft mill. The new equipment is the Midwest-Smith automatic continuous beater. It operates under very close control.

Two main objectives prompted engineering of this new type beater, namely, the development of maximum desirable Mullen, tensile and tear characteristics of any kind of papermaking fiber, and to do it on a continuous, high tonnage basis.

The accomplishment of the first objective implies a high measure of flexibility and that is readily achieved. This new beater will condition fiber either for glassine or condenser where high density and finish is required or for grades like cement bag where emphasis is on porosity.

Flexibility is attained by extremely close control of the setting of bedplates in relation to the roll and, by directing flow of the stock in such a manner as to force it to make eight separate trips under the roll and over the plates before leaving the beater.

The second main point—automatic continuous high capacity operation—results from nozzling the stock into the beater, totally enclosed by the way, under about 60 lb. pressure and by employing three bedplates instead of one in order to subject the stock to from four to eight times the usual hydrating surface before it reaches the discharge.

Each of the three bedplates is independently controlled, a three-pen pressure recording control instrument automatically varying the pressure to readjust settings as the density and/or flow of the stock fluctuates. Beating cycle is from 1 to 3 minutes and output over a 24 hour period will run from 50 to 100 tons, depending on type of fiber, freeness drop desired and tonnage required.

Some other advantages: Saving in power; no actual bar to bar contact to wear down the roll bars and bedplates; motor capable of driving an average capacity jordan will drive a Midwest-Smith with power saving of 30% to 50%. Kraft mills and mills using semi-chemical pulps seem a logical market for these beaters. Booklet available by writing Midwest-Fulton Machine Co., 918 Woodley Ave., Dayton, O.

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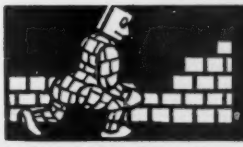

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Personals

PACIFIC COAST NOTES

TED SHERA, son of *BRIAN SHERA*, pulp and paper industry representative for Penn Salt Manufacturing Co. of Washington, Tacoma, Wash., was playing his second year on the Yale varsity football team this fall when he suffered a broken leg in the Yale-Brown game. His position was line backerup.

LYLE BRADFORD "ROBBIE" ROBINSON, 58, longtime engineer and representative of General Electric Co. out of Seattle, who was active in development of the big log chippers of recent years in Northwest Pacific mill, died Nov. 1 in a Seattle hospital after a four months illness.

JACK WILCOX, manager of process equipment division, Electric Steel Foundry Co., Portland, Ore., completed a crowded three weeks trip to pulp mills in South and East of U.S.

EDWIN R. BARRETT, partner with Chas. Yost in Barret & Yost, 5600—14th N.W., Seattle, factory representatives for steam plant control and process equipment, recently spent a week at the factory school of one of Mixing Equipment Co., Rochester, N.Y.

E. N. WENNBERG, superintendent of paperboard production, Weyerhaeuser Timber Co., Longview, Wash., has a new home at 1202 23rd Ave., Longview.

O. K. CHAPMAN, until recently assistant superintendent, Weyerhaeuser Timber Co., pulp division, Everett, Wash., has been transferred to the organization's Longview operations as shift superintendent in the kraft mill—not as mill superintendent as previously reported in this column.

E. A. BATTILEGA, formerly sales manager. Carnation Co., has been appointed promotional manager for Package Containers, Inc., at the Portland, Ore., office. The announcement was made by Stanley L. Mead, president. The concern manufactures HomeToter bags.

WILLARD T. EVENSON has been elected a director of St. Helens Pulp & Paper Co., according to announcement by *MAX R. OBERDORFER*, vice president and general manager. Mr. Evenson who is president of Wauna Lumber Co. and treasurer of Deep River Timber Co., fills vacancy of late Phil Metschan.

HARRY THURLOW, new manager of Rayonier at Port Angeles, was graduated from the University of Washington in 1931 with a degree in electrical engineering and has been with Rayonier since Dec. 1935 when he joined at its Grays Harbor Division as a draftsman. In July 1944 he was appointed assistant resident engineer of Grays Harbor and in Nov. 1944 was transferred to Port Angeles. In Sept. 1945 he was appointed resident engineer of Port Angeles and since Oct. 1950 has served as assistant resident manager of this division. His father, the late Harry Thurlow, Sr., was widely known in lumber industry as supply company representative, and another son, Steve, is in Seattle as an equipment lines representative.

DR. JAMES D. WETHERN joined the experimental pulping section of Central Research Dept., Crown Zellerbach Corp., Camas, Wash., as senior research chemist after completing qualifications at Institute of Paper Chemistry for his doctorate, according to *DR. W. W. MOYER*, director of research. Other recent personnel additions to Central Research: *RUEBEN A. MARTI*, from Forest Products Laboratory, Madison, Wis., in charge of experimental paper machine operation; *C. J. McKINNIE*, U of W chemical engineering graduate, in paper products section; and *VIRGIL G. GERTTULA*, chemical engineer formerly with Union Oil, chemical engineering.

JAMES P. TOWEY has become manager of sales, Coarse Paper division, Crown Willamette division, Crown Zellerbach Corp. announced R. A. McDonald, chairman of the executive committee, San Francisco. Mr. Towey has been with the company for about 34 years.

R. E. "DICK" HANLEY, well known as 1927-35 coach at Northwestern University and co-coach of Eastern all-star Shrine football team for 12 years, has affiliated with Pacific Paperboard Co., Longview, Wash., as vice president, assisting Pres. E. E. Flood in executive capacity. Following several years coaching, Mr. Hanley entered insurance business in Chicago, winning lifetime membership in the Million Dollar Round Table his first three years. For the past two years he has been at Albuquerque, N.M., as distributor for Thermocon products. Mr. Hanley served in U. S. Marine Corps during World Wars I and II.

Moffitt Succeeds Rue At Hooker Plant

Thomas E. Moffitt has been promoted to works manager of Hooker Electrochemical Co., Tacoma, Wash., division, succeeding John D. Rue, who retired under the company plan Oct. 1 after over 20 years in important sales and production positions in both Niagara Falls, N.Y., and Tacoma.

Mr. Moffitt, a graduate of Cornell, was with Hooker in Tacoma from 1930 to 1945 in sales capacities, including serving as acting sales manager and assistant sales manager under Col. Albert H. Hooker, Jr. He served in the navy in World War I and army in World War II. After five years with other industries, he returned to Hooker in 1950 and was assistant works manager under Dr. Rue.

Among five other Tacoma plant employes retired Oct. 1 was Howard D. Norris, plant engineer, succeeded by George A. Gentes, and Carl H. Stewart as traffic manager, succeeded by Chester D. Roberts.

New Board Plant In North Mexico

A new $2,500,000 hardboard plant in Mexico is Fibracel S. A. de C. V. Cinbad Bolles, whose production of 15,000 tons a year is sold half in Mexico and half in the U.S. The plant is located at San Luis Potosi, Mexico. Plant manager is Carlos Ziegler, whose address is 95 Paseo de la Reforma, Mexico City.

American Defibrator Co. engineered the plant and its equipment is important in the process.

RAYONIER APPOINTMENTS

MORTON B. HOUSTON, of Seattle (left), has been appointed Assistant to the President, and HARRY A. THURLOW (right), has been named Resident Manager of the Port Angeles, Wash., Division of Rayonier Incorporated, according to announcements by President Clyde B. Morgan. Mr. Houston, whose headquarters are in the Seattle office, has been with the company 21 years and, like several other pioneers of the firm, went west from Minnesota where he had been in pulp and paper field. Mr. Thurlow succeeds William E. Breitenbach, who has transferred to new executive offices in the new Chrysler Building East, in New York, where Mr. Breitenbach wil be in charge of Manufacturing. Last month we announced appointment of George Holt as Resident Manager at Hoquiam, Wash.

Northern Mills Building Evap. Plant

Another Wisconsin mill now constructing a plant for evaporation and burning of sulfite waste liquor is Northern Paper Mills, Green Bay. An existing building is being remodeled to house the General American Transportation Corp.'s Rosenblad design evaporator. GATX is attempting to get required 150 tons of alloy stainless steel, also in demand for jet airplane engines and other defense products.

Barrell's Paper Annual Has New Features

Volume X of Barrell's Paper Annual was recently published with its up-to-date directory on associations and a feature is a "Decennial Index," covering every title published since the first issue in 1942.

The "Directory of Officials" of 33 associations is the only one of its kind. "Keeping Pace With Papermaking," the lead article, traces methods of drying from loft-drying to the present continuous system. A revised edition of "Paper Trade Terms" by William Bond Wheelwright occupies the last 48 pages of the 96 page book. This is the only illustrated dictionary of paper terms.

The edition limited to 1,000 copies is distributed only to paper manufacturers with compliments of William L. Barrell Co., manufacturers of Siamese and Tour Boss Cotton Dryer Felts.

Evap. and Burn Plant Being Built

Ground has been cleared and footings poured for a plant to reduce sulfite pollution at Interlake Mill of Consolidated Water Power and Paper Co., Appleton, Wis.

This new structure will house the stainless steel Rosenblad-type evaporator for concentrating sulfite liquor to 60% solids so the concentrate can be sprayed into a furnace for burning as industrial fuel. Delivery date of the evaporator remains uncertain. General American Transportation Co., which fabricates these big units, has word it will receive in December required tonnage of scarce stainless steel alloy.

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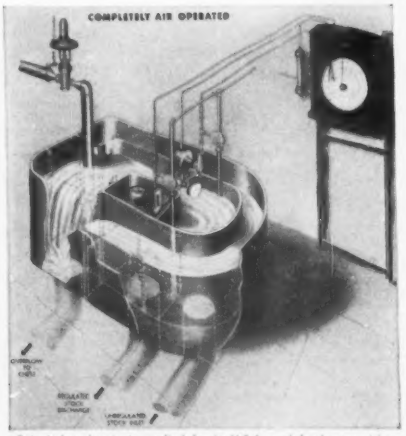

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Figure 5460 pumps have the famous two-vaned, closed impellers . . . best for handling fibrous and stringy stock.

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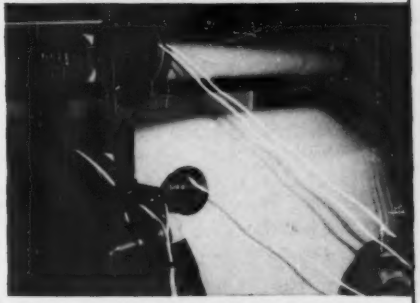

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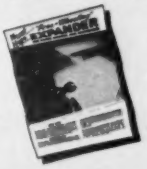

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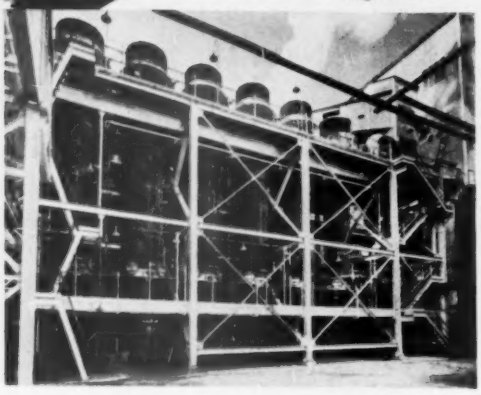

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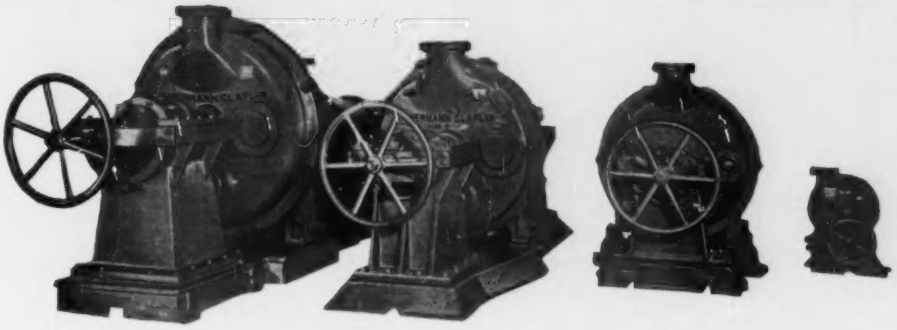

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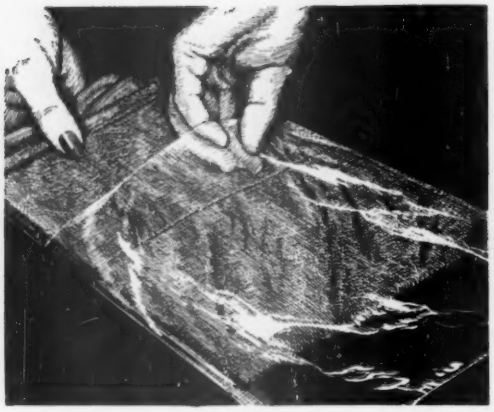

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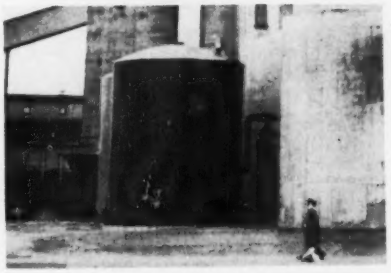

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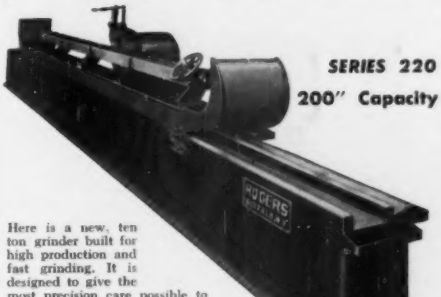

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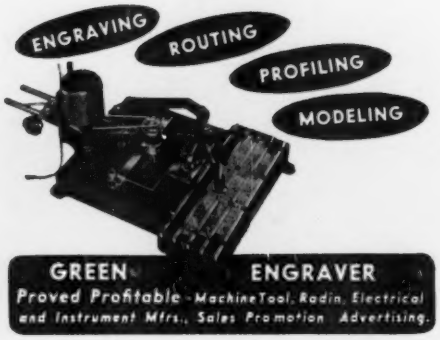

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CONTENTS

1. Structure and Properties of Pulpwood
   Structural, Microscopic, and Physical Properties of Wood
   Composition and Chemical Properties of Wood
2. Preparation of Pulpwood
3. Manufacture of Mechanical Pulp
4. Manufacture of Sulphite Pulp
5. Manufacture of Alkaline-process Pulps
   General Discussion
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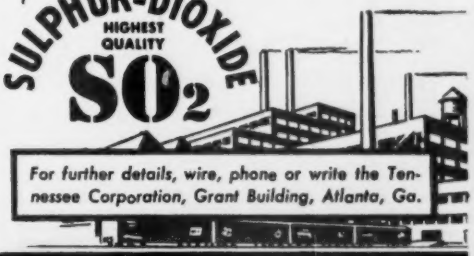

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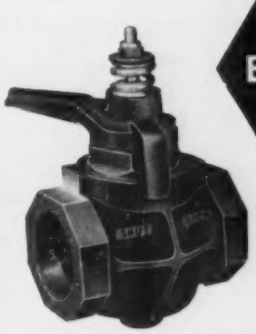

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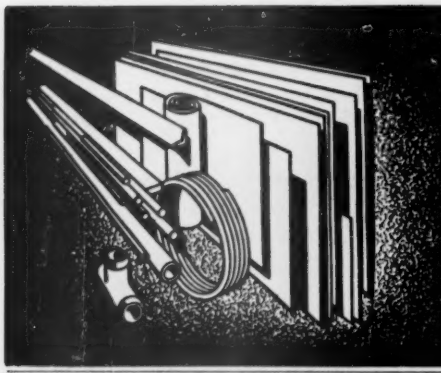

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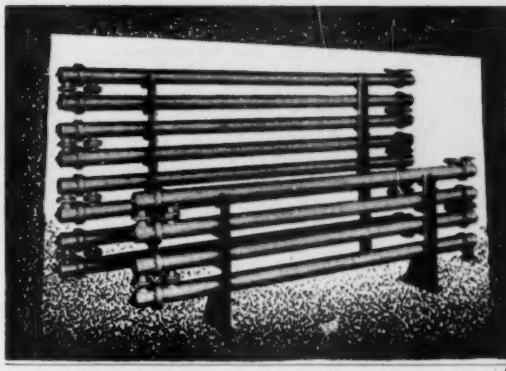

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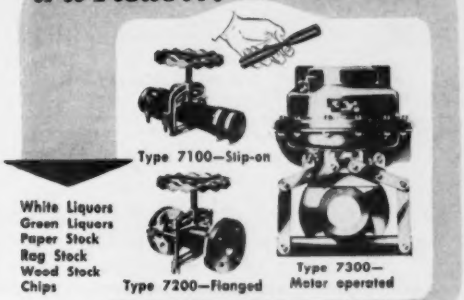

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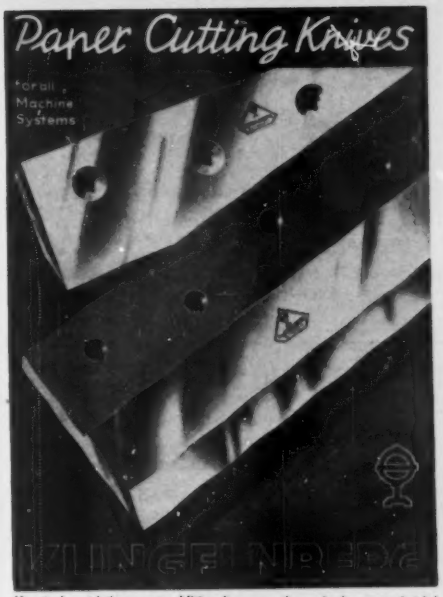

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FIRMS YOU SHOULD KNOW

Advertising Index

Alaskan Copper & Brass Co. 118
Alaskan Copper Works 119
Allis-Chalmers Mfg. Co. 45
American Cyanamid Co., Industrial Chemical Division 43
American Potash & Chemical Corp. 114
Appleton Wire Works 49
Appleton Woolen Mills 118
Asten-Hill Manufacturing Co. 17

Babcock & Wilcox Co. 16
Bagley & Sewall Co. ..... Inside Front Cover, 71
Bauer Bros. Co. 30
Beloit Iron Works 67
Bingham Pump Co. 9
Bird Machine Co. 39
Black-Clawson Co. Divisions: Shartle Bros. Machine Co.; Dilts Machine Works; Kohler System 57
Bristol Company 95
B. C. Bridge & Dredging Co. 111
Buell Engineering Co. 22
Bulkley, Dunton Organization 47
Bulkley, Dunton Pulp Co. 110
Butterworth & Sons Co., H. W. ... 114

Cameron Machine Co. 23
Carroll, Bechtel & Langtry 121
Chemical Linings, Inc. 120
Chemipulp Process Inc. 121
Chromium Corp. of America 121
Clark-Aiken Company 73
Classified Advertising 102
Cochrane Corp. 116
Corn Products Sales Co. 112
Crane Company 12

DeZurik Shower Co. 117
Dilts Machine Works 57
Dorr Company 11
Dow Chemical Co. 109

Ederer Engineering Co. 104
Electric Steel Foundry Co. 83
Elliott Company 15

Fabri-Valve Co. of America 116
Fairbanks Morse & Co. 109
Flexible Valve Corp. 119
Foster Wheeler Co. 63
Fuller Company 97

General American Transportation Corp. 6
General Chemical Division, Allied Chemical & Dye Corp. ... 8
Gordon, Walter S. 121
Goslin-Birmingham Mfg. Co. 112
Gottesman & Co., Inc. 2
Green Instrument Co. 116
Griffith Rubber Mills 118
Guest & Sons, C. M. 121

Hansel Engineering Co., Ltd. 120
Hermann Mfg. Co. 113
Heyer Sales & Engineering Co. 119
Hooker Electrochemical Co. 65
Huyck & Sons Co., F. C. 21
Hyster Company 87

Infilco Incorporated 26
International Nickel Co. 10

Jenssen Co., G. D. 120
Johns-Manville Corp. 41
Johnson & Co., Alvin H. 121
Jones & Sons Co., E. D. 33

Knox Woolen Co. 122
Kohler System 57
Koppers Company Inc., Elex Precipitator Dept. 19

Langston Co., Samuel M. 77
Link-Belt Company 1, 24, 61
Lyddon & Co., Inc. 34

Main, Inc., Chas. T. 121
Mason-Neilan Regulator Co. 28, 29
Merrick Scale Mfg. Co. 120
Metcalf & Harstad Associates 121
Midwest Fulton Machine Co. 35
Moore & White Co. 91
Morden Machines Co. 93
Morey Paper Mill Supply Co. 18
Mount Hope Machinery Co. 111

Nash Engineering Co. 103
National Aluminate Corp. 59
National Aniline Division Allied Chemical & Dye Corp. ... 33
Noble & Wood Machine Co. 75
NOPCO Chemical Co. 14
Northwest Copper Works 115
Northwest Filter Co. 120
Northwest Lead Co. 120
Norton Company 99

O'Donoghue, Roderick 121
Oliver Corporation 32
Owens-Corning Fibreglas Corp. ... 27

Pacific Coast Supply Co. 106
Paper & Industrial Appliances, Inc. 108
Parsons & Whittemore, Inc. 34
Perkins-Goodwin Co. Outside Back Cover
Pfeifer & Shultz 120
Puget Sound Pulp & Timber Co. Inside Back Cover
Puget Sound Sheet Metal Works .. 114
Pulp Bleaching Co. 120
Pusey & Jones Corp. 78

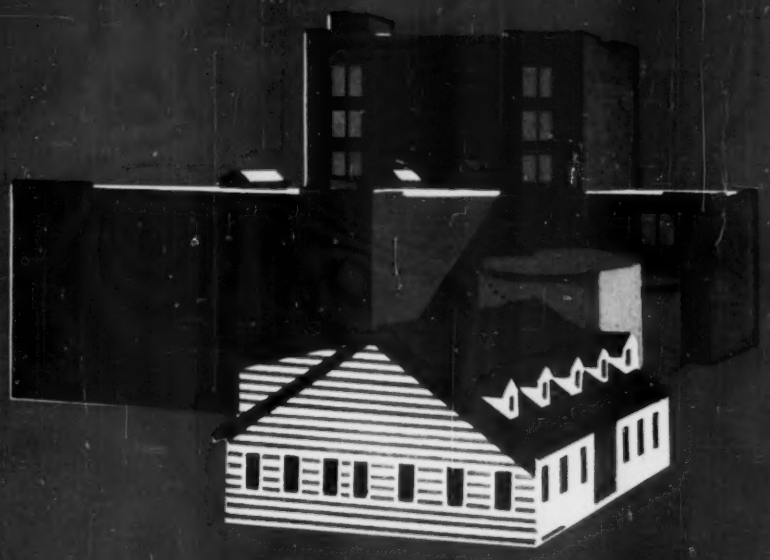
Rambo, W. H. 120
Rayonier Incorporated 13
Rice Barton Corp. 51
Rietz Manufacturing Co. 119
Robert & Co. Associates 98
Roehlen Engraving Works 120
Rogers & Co., S. C. 115
Roslund, John V. 113
Ross Engineering Corp., J. O. 53
Rust Engineering Co. 120

Sandwell & Company 121
Sandy Hill Iron & Brass Works 69
Saran Lined Pipe Co. 109
Shartle Bros. Machine Co. 57
Shuler & Benninghofen 110
Sirrine Co., J. E. 121
SKF Industries, Inc. 5
Smythe, Ray 121
Sprout Waldron & Co. 7
Stadler, Hurter & Co. 121
Stebbins Engineering Corp. 107
Stevenson & Rubens 121
Stone & Webster Engineering Corp. 4
Sumner Iron Works 81
Sutherland Refiner Corp. 25
Swenson Evaporator Co. Div. Whiting Corp. 90
Swift & Company 115

Takahashi & Co., C. T. 117
Tennessee Corp. 117
Texas Gulf Sulphur Co. 31
Titan Chain Saws, Inc. 89

Union Machine Co. 102
Union Screen Plate Co. 102

Wade & Co., R. M. 117
Washington Iron Works 105
Western Precipitation Corp. 101
Weyerhaeuser Timber Co. 118



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